

COMPUTERWORLD

3Com cuts back net plans

Users no longer have 'one-stop shopping' option

BY PATRICIA KEEFE
and JIM NASH
CW STAFF

SANTA CLARA, Calif. — User reaction ranged from staunch support to angry condemnation last week as 3Com Corp. abruptly withdrew from the client/server market and refocused its efforts on internetworking.

A three-phase restructuring and downsizing plan announced by the company will result in both a \$70 million pretax write-down and 3Com's first layoff ever, affecting 12% of the 1,953-person work force [CW, Dec. 17].

3Com confirmed that it will turn its LAN Manager 2.0 business over to Microsoft Corp., in-

cluding LAN Manager-related technology 3Com currently has under development.

Don Barry, network administrator at Ochsner Medical Institutions in New Orleans, said the move harms users who enjoyed the simplicity of dealing with one networking vendor.

However, 3Com Chief Executive Officer and President Eric Benhamou said there just were not enough sites like Ochsner that were willing to rely on 3Com to supply virtually all the pieces of its network — hence his divestiture plans and pact with Microsoft.

3Com Vice President Alan Kessler stressed that 3Com will continue to offer and support all

Continued on page 4

DEC to bite the layoff bullet

BY NELL MARGOLIS
CW STAFF

MAYNARD, Mass. — Digital Equipment Corp. broke with a lifelong no-layoff tradition last week and announced that it will "involuntarily sever" approximately 3,500 U.S. employees by June 30.

The plan is unlikely to find fans in the ranks at DEC, where job security has been a watchword for 34 years. However, analysts — many of whom have long characterized DEC layoffs as inevitable — applauded the move, even questioning whether it goes far enough. Meanwhile, users largely took the occasion to repledge allegiance to the struggling vendor.

Gerald Siddons, director of

the Scientific Computing Division at the Dana Farber Cancer Institute, a DEC user site in Boston, said the company deserves applause for making the right, albeit hard, decision. "You've got to live within your means," he said. "[Massachusetts] didn't do it, and look where we are. Chrysler did it, and look where they are," he added, referring to DEC's troubled home state and the automobile maker that came back from near bankruptcy.

"You've got to feel bad for Ken Olsen," Siddons added. "For years, he's said, 'Read my lips: no layoffs,' and now he's got to have layoffs."

Among other DEC users in Massachusetts — where the layoff is predicted to hit heavily — Bill Stella, senior vice president of information systems at Wal-
tham, Mass.-based Arkwright Mutual Insurance Co., said DEC "needed to become leaner." From a business standpoint, Stella termed the action a posi-

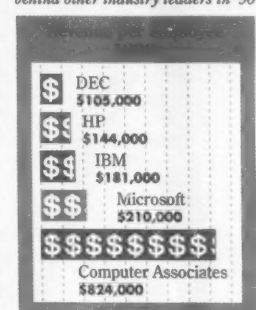
tive step, but, he said, "I'm not pleased to hear about this from the people point of view."

Arkwright, which has built a major customer information

Continued on page 8

Trailing indicator

One gauge of efficiency — revenue per employee — shows DEC lagging behind other industry leaders in '90



Source: Montgomery Securities
CW Chart: Paul Mock

Army's IS ready for the worst

BY MAURA J. HARRINGTON
CW STAFF

FORT HUACHUCA, Ariz. — Obtaining permission to put an antenna on a Saudi Arabian prince's mountain is just one of the frustrating problems currently on Maj. Noel Goyette's mind as he helps prepare the U.S. Army for a possible war in the Middle East.

With peace talks appearing to have fallen apart last week and tomorrow's United Nations' deadline for Iraq to withdraw from Kuwait, the prospect of

war is imminent.

"Since we moved out of the batch computer processing age, which is what we were in Vietnam, we've never tried to do anything like this on this scale," said Goyette, chief of the Information Systems Operations branch of the headquarters of the U.S. Army Information Systems Command.

The Information Systems Command is responsible for the management and upkeep of the Army's IS operation. Goyette's branch, with about 1,500 personnel in the Middle East,

Continued on page 89



Who can open E-mail?

Nissan latest to be sued for privacy invasion

BY JIM NASH
and MAURA J. HARRINGTON
CW STAFF

LOS ANGELES — Blistering "Dear John" notes, embarrassing wisecracks and even sexual fantasies are showing up on corporate electronic-mail systems with greater frequency. And in some cases, they are finding

their way into personnel folders and even to court.

Last week, two information systems employees filed a suit in California Superior Court against Nissan Motor Corp. in U.S.A. claiming the company violated their privacy by intercepting their electronic messages. The E-mail notes allegedly led to the firing of one and the forced

resignation of the other, the employees said.

It is the second such E-mail privacy suit to be filed in California in the past year, although the first suit was thrown out of court last week in a ruling that rejected any right to privacy on employer-owned systems.

Continued on page 88

Confidential! Don't open, ever

The rapid rise in electronic-mail use may heighten concerns over privacy

U.S. E-mail users		
Year	Total	LAN-based E-mail
1988	6.96M	545,000
1989	8.68M	1.18M
1990	12.43M	3.0M

Source: International Resource Development, Inc.
CW Chart: Marie Haines

Sliced fiber-optic cables point up technology gaps

BY JOANIE M. WEXLER
and JOHANNA AMBROSIO
CW STAFF

Users of fiber-optic communications lines said two recent outages point to a need for more fiber routes and better planning with their carriers to offset the risk of concentrating thousands of calls into one vulnerable cable pair.

The first outage this month occurred Jan. 4, when an AT&T maintenance crew mistakenly cut through a fiber-optic cable in Newark, N.J. Approximately 40% of AT&T's long-distance service into and out of New York was disrupted.

Just over two years ago, a similar incident, also in New Jersey, disrupted 3½ million calls when contractors installing piping cut a cable. Coincidentally, one year ago this week, a software glitch affected AT&T service across the nation on Martin Luther King Jr.'s birthday — luckily, a federal holiday.

Last Monday, a U.S. Sprint Communications Co. fiber cable in Indiana broke, disrupting calls

to and from Chicago and Indiana.

Affected customers took the mishaps in stride. However, one New York user affected by the

Continued on page 87

INSIDE

Product Spotlight — Dial-up modems: Are they safe at any speed? Page 57.

The final count on AT&T's \$90-per-share tender offer for NCR should be in hand Wednesday, but it is unlikely to end the battle. Page 8.

FDIC takeover of Bank of New England has no immediate impact on IS, but the future is very much in question, as are vendor contracts. Page 89.

National Car Rental taps EDS for 10-year data and communications outsourcing pact. Page 10.

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IN THIS ISSUE

NEWS

- 4 Handwriting-recognition** systems could find a very receptive market among professionals such as nurses, salespeople and police officers.
- 6** The introduction of Microsoft's Excel 3.0 is keeping Lotus' advertising ball rolling, but company officials insist that Excel is no threat to 1-2-3.
- 8** While AT&T's attempted takeover of NCR is looking very possible, the beleaguered NCR is by no means ready to give up the ghost.
- 10** EDS vanquishes IBM over the prize of one of the largest transportation outsourcing deals ever.
- 14** Customers looking forward to a 32-bit version of OS/2 don't have much longer to wait, industry sources say.
- 18** Wang introduces Open/image Windows 3.0, an image-processing package designed for personal computer users of Microsoft Windows 3.0.
- 87** Toy maker Mattel is tossing its tortoise-paced, satellite-based network in favor of a speedier fiber-optic system.
- 89** Although life and business goes on at the bailed-out Bank of New England, repercussions may still be felt in the future.

Quotable

"A year or two ago, I was thinking how switched 56K bit/sec. digital could give me faster communications. Now, I'm thinking about my company taking my job to pay for it."

JOHN TEGELER
AMERICAN DOOR CO.

See story page 57.

SYSTEMS & SOFTWARE

- 29** Not all Unix flavors are alike, which makes for some confusion when mixing and matching.

PCs & WORKSTATIONS

- 37** More and more dealers are appealing to customers to trade in used PCs.
- 44** Technology analysis: Experts rate HP's Vectra 486 as stable and solid but pricey, while they give Northgate's Elegance kudus for power and speed.

NETWORKING

- 49** Terminal servers are winning popularity contests among users of terminals who need to connect either to a LAN or to each other.

MANAGER'S JOURNAL

- 53** Trash collector Waste Management of North America finds a treasure in its information systems department.

COMPUTER INDUSTRY

- 67** Focus and risk are key to Intel's projected 1991 growth, which analysts say will be significant despite the recession.

PRODUCT SPOTLIGHT

- 57** Speed is one of many factors in deciding which modem to buy.

IN DEPTH

- 63** Three information planning techniques that even business managers can understand. By Bob Curtice and Dave Stringer.

DEPARTMENTS

- 6, 88** News Shorts
- 22** Advanced Technology
- 24** Editorial
- 55** Book Review
- 72** Computer Careers
- 80** Marketplace
- 84** Training
- 86** Stocks
- 90** Trends

EXECUTIVE BRIEFING

■ Using the latest and greatest networking technology can be nice, but there can be dangers in terms of reliability. Managers have been learning that lesson from the nuisance of communication outages caused by fiber-optic cable cuts. Now, armed with the fresh memory of two outages during the first week of the year, managers in New York and the Midwest want to take the initiative and work with carriers such as AT&T to help avoid such emergencies. **Page 1.**

■ There's more ouch in the financial news. DEC's no-layoff tradition died last week when the vendor said it will "involuntarily sever" 3,500 U.S. employees. Unisys' fourth-quarter results are due next week, and observers agree there will be a loss. The question seems to be "how big?" In addition, the question mark may be removed from above NCR's head Wednesday, because AT&T's tender offer expires at midnight tomorrow night. On the user side, the federal takeover of Bank of New England did not have an immediate impact on the information systems group. It's business as usual in the computer room. **Pages 1, 8 and 89.**

■ The discovery that your Unix isn't their Unix can lead to challenges and problems that were unexpected when firms first moved to the open operating system. The most common complaints center around communications, as managers discover when they try to tie together Unix systems from different vendors in autonomous departments. **Page 29.**

■ Life after layoffs: Part 1 of this series focuses on the determination of a former programmer who is now making ends meet by consulting, writing and translating Spanish to English. **Page 72.**

■ Yes, you can make clear to nontechnical managers the effect that information technology has on a firm. IS Executives can take advantage of strategic planning techniques that show how information can impact an organization. **Page 63.**

■ "Garbage in, garbage out" takes on a fresh meaning at Waste Management of North America. Waste Management's successful IS group is an example of a new hybrid — which has been called a "centrally decentralized" operation that relies on a strong headquarters staff and regional CIOs out in the field. **Page 53.**

■ National Car Rental System has joined the

outsourcing crowd, awarding EDS a 10-year contract to run its information technology operation. **Page 10.**

■ Apple users may be getting antsy. Macintosh users surveyed by Computerworld remain loyal to their machines but are leaning toward Microsoft Windows and MS-DOS machines, showing dissatisfaction with Apple's support. **Page 41.**

■ Support is a concern for Data General users, too. But in a survey by a DG user group, the leading question raised is whether users can count on continued software quality. **Page 29.**

■ PC dealers are dealing in new ways, including offering trade-in allowances on used equipment. The idea has been tried before with only limited success. **Page 37.**

■ On-site this week: When it was time to build a voice-mail system for its customers, Pacific Bell Telephone decided to break out of the telephony-specific hardware cycle. Pacific Bell is using a Unisys mainframe to do work that in the past would have required a proprietary, limited-function communications processor. **Page 33.** Marist College sees a chance to build the college network of the future and is taking advantage of an IBM grant to carry out its dream. **Page 49.**

The 5th Wave

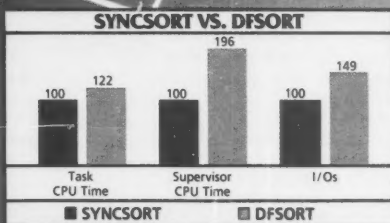


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NCR takes new laptop road

BY MICHAEL FITZGERALD
CW STAFF

DAYTON, Ohio — NCR Corp. will take a different road when it enters the 80386 notebook computer market this spring, basing its first systems on Intel Corp.'s new portable-specific 80386SL chip. Observers said NCR's entry could mark the beginning of the end for the 80386SX chip that is now at the heart of many high-powered portables.

NCR showed portable products based on the 80386SX at Comdex/Fall '90, but product line manager Bruce Langos told *Computerworld* that its System 3000 portables under development will use the 386SL, which combines a 386SX chip with cache controller and memory.

It creates the potential for smaller, lighter portables with battery lives of between four and six hours, compared with three

hours on most SX notebooks. The 20-MHz SL also runs slightly faster than a 20-MHz SX for about the same cost, according to David Ryan, Intel's marketing manager for the 386SL.

NCR expects to introduce a notebook system in the April to May time frame, followed by a handwriting interface-based device by midyear. The System 3100 will run at 20 MHz, weigh less than six pounds and fit into the 8½-by 11-in. form factor.

Lightweight in the ring

NCR is shooting to have the notepad system weigh in at less than four pounds and feature an IBM Video Graphics Array-compatible display and base configuration of 2M bytes of random-access memory, expandable to 16M bytes. It also expects to offer a built-in, 2,400 bit/sec. modem, facsimile capabilities, a four- to six-hour battery life, a

port to support a standard keyboard and an external 3½-in. floppy drive. Langos said that the portables will have flash memory drives, which are credit-card-size memory cards that can store erasable or read-only memory (ROM). The notepad is expected to list for \$3,500.

While NCR is the first company to publicly acknowledge that it is working on the SL, analysts said it is by no means alone.

"The 386SX notebook market is going to be the shortest lived product line you've ever seen," said Andy Seybold, portable computing analyst at Dataquest, Inc. in San Jose, Calif. "The next generation will be all SLs, and they'll all be here by Spring Comdex [in May]."

Dan Ness Jr., an industry analyst at Computer Intelligence in La Jolla, Calif., agreed that vendors will move quickly into the SL market, "because the tech-

nology is compelling."

Moreover, Intel does not expect to see such a quick shift in the market, although one source at the company said NCR would not be the first vendor to announce an SL-based product. Ryan said volume production of the SL chip is "a definite reality" for this quarter but noted that portables based on the SL will need time to establish a market presence.

The System 3100 that will use a handwriting interface will go into beta testing on April 1 at 10 sites, Langos said.

NCR will not bundle operating software but will let users choose between Go Corp.'s Penpoint, Microsoft Corp.'s Pen Windows or Microsoft's DOS, which will be installed in ROM on the system.

According to Langos, San Francisco-based Communications Intelligence Corp. is developing specialized handwriting algorithms for NCR's notepad. It will also accommodate a standard-size keyboard.

Microsoft pen-based system is unveiled

BY JAMES DALY
CW STAFF

Handheld systems using applications based on Microsoft Corp.'s Pen Windows handwriting-recognition technology could reach the commercial market by the end of the year, Microsoft officials said last week.

Pen Windows, which is based on Windows 3.0, will come pre-installed on an "integrated tablet," a device resembling a computer screen with an attached keyboard that will be sold by

OEMs, Microsoft Vice President Jeff Raikes said. The Intel Corp. 80286- or 80386-based tablet will include about 2M bytes of random-access memory and will retail for about \$4,000.

With a pen-based computer, users enter data by clearly writing printed commands rather than tapping keys. The potential for the developing technology is broad: Salespeople could enter orders from the road, police officers could write tickets, and nurses could update patient charts. As such, sales of pen-

based computers could hit \$3 billion by the year 2000, Prudential-Bache Securities, Inc. analyst E. Gray Glass said.

Grid Systems on the map

Tandy Corp.'s Grid Systems Corp. is the only firm selling pen-based notepad computers in the U.S., although Momena Corp. and Superscript, Inc. are planning introductions.

Sony Corp. and Canon U.S.A., Inc. offer products in Japan but currently have no plans to sell them in the U.S. Additionally, Go Corp. in Foster City, Calif., will demonstrate its pen-based operating system at a developers conference in San Francisco on Jan. 22.

A beta-test version demonstration of Pen Windows last

week relied on navigating the user through programs. Pen Windows also recognized uppercase and lowercase letters and was adept at recognizing imperfect printing. However, cursive writing recognition is still several years off, Raikes said.

Raikes said current versions of Microsoft applications such as Microsoft Word, Excel and Powerpoint can run on Pen Windows, but succeeding generations will more thoroughly exploit Pen Windows technology.

Although handwriting recognition is still primarily geared for handheld computing, its potential is much broader. "Ultimately, we see data input by pen across all platforms on up to minicomputers," product manager Pradeep Singh said.

3Com

FROM PAGE 1

versions of LAN Manager up to Version 2.0 and related value-added software on its servers. 3Com will help Microsoft port 3Com's LAN Manager-related software to LAN Manager 2.0.

In return, 3Com will not receive any cash compensation. Benhamou told financial analysts that Microsoft has excused about \$25 million owed under a licensing contract between the two vendors.

Ironically, 3Com's effort to meet user demands by providing one-stop shopping may have been its undoing. Analysts said the firm was spread too thin over too many markets.

3Com will narrow its focus significantly. In addition to downsizing its network management investment, the company has put its file server, network

station and Systems Network Architecture (SNA) gateway businesses on the block.

It will take the onetime charge estimated at \$45 million against fiscal third-quarter income, resulting in a loss.

Opposite sides of 3Com

Some industry analysts were concerned that 3Com is too far behind in the bridge and router market, while others commended the company on finding a focus and getting back to basics.

Wall Street fell somewhere in between, as the stock quickly lost 25% of its value. 3Com is, however, considered in sound financial shape and has no debt.

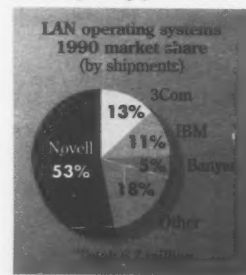
Barry also criticized how the switch was presented to users, claiming that such a dramatic change with so little preparation leaves him wondering which division may be next.

An information systems manager at a Midwestern financial

company was not as surprised. 3Com's decision to divest itself of its Maxess SNA gateway soft-

LAN clamp

3Com has been unable to pry loose Novell's hold on the local-area network operating system market



Source: International Data Corp.
CW Chart: Paul Mock

ware division was logical, he said. "Their Maxess software was behind the market."

From a software perspective, 3Com's moves appeared to be more warmly embraced. Quotron Systems, Inc.'s senior software specialist Todd Booth said he was encouraged for the same reason hardware users were disappointed. "I hate it when we have to maintain multiple companies' software," Booth said.

If 3Com does concentrate more on the hardware connecting discrete systems, Quotron is likely to buy more of its products, he said.

Barry said Ochsner will spend most of its annual networking budget elsewhere. "We may buy their boards but little else," he said. "It's an issue of trust, and we really feel that that trust has been violated."

Analysts will be watching 3Com in the bridge and router market, which is dominated by Digital Equipment Corp., Cisco Systems, Inc. and Wellfleet Communications.

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NEWS SHORTS

Revlon settles with Logisticon

Revlon, Inc. and Logisticon, Inc. are not fighting in court anymore, but the two companies, which came to blows over Revlon's alleged nonpayment of fees, are not telling why. Revlon sued Logisticon in Superior Court in Santa Clara, Calif., on Oct. 22, after the small Silicon Valley software firm used a modem to disable warehouse automation software. Logisticon's late-night telephone call to Revlon's systems idled one Revlon warehouse in Edison, N.J., and another one in Phoenix for three days. Revlon demanded payment of damages. The two companies recently disclosed that they had, indeed, reached an out-of-court settlement, but neither would talk about the terms.

Vendors unite on sales reports

The world's largest personal computer manufacturers are planning to suppress their competitive natures and pool their sales statistics. The goal is to render a more accurate, reliable and useful portrait of the marketplace than is currently attainable from independent market research. Intel Corp. and Compaq Computer Corp. are among the industry giants committed to forming a market research collective, to be known as the Worldwide Microcomputer Statistics Association. The group will reportedly not make its sales figures public.

Amelio heads National Semi

It was announced last week that Gilbert F. Amelio, who is currently president of Rockwell International Corp.'s Communications Systems Unit, will leave the company to become president and chief executive officer of National Semiconductor Corp. When Amelio takes up his new position on Feb. 1, he will be succeeded at Rockwell by Kent M. Black, the company's executive vice president and chief operating officer.

NTT plans broadband ISDN

Nippon Telegraph and Telephone Corp. (NTT) last week announced an agreement with a multinational assortment of leading communications equipment providers to develop a network system for broadband Integrated Services Digital Network (ISDN) services, which the Japanese carrier plans to introduce in fiscal 1996. NTT plans a series of broadband ISDN offerings that will support voice, data and video transmissions at speeds of 156M or 620M bit/sec.

DEC plans retail products

Digital Equipment Corp. is expected to announce a bevy of products and alliances at the National Retail Federation's conference in New York this week. Under contracts totaling \$16 million, Toys 'R Us will purchase 1,300 DEC Microvax 3100 systems to upgrade its current Microvax 2000s at 700 stores, and CVS will purchase Decstation PCs for 1,300 stores. DEC also announced Deccashier, an integrated point-of-sale terminal, and an architecture to help retailers design and implement multivendor systems.

Schementi takes over Columbia IS

Columbia Pictures Entertainment, Inc. announced the appointment of Peter Schementi to the position of vice president of MIS last week. Schementi will report to Ted Howells, Columbia vice president and controller. Schementi previously held the position of vice president of information technology at EMI-Capitol Music.

D&B upgrades HR package

Dun & Bradstreet Software last week released an enhanced version of The Human Resource, the company's PC-based human resources software package. According to the vendor, Release 4.02 offers over 30 additional functions, such as screen painting, menu and database customization and field-level security.

More news shorts on page 88

Excel packs Windows punch

Microsoft claims Excel 3.0 features an edge over Lotus' 1-2-3 spreadsheet

BY JAMES DALY
CW STAFF

REDMOND, Wash. — Microsoft Corp. pointed all of its guns at spreadsheet market leader Lotus Development Corp. last week when it introduced a new version of Excel that packs in more than 100 new graphical and analytical features.

Microsoft officials claimed Excel 3.0 will have a significant edge in the hotly contested market for spreadsheets that use the company's Windows 3.0 graphical user interface, which has sold more than 2 million copies since it was introduced in May 1990.

"This year will determine which spreadsheet will lead to the Windows environment," Microsoft Chief Executive Officer Bill Gates said. "The last six months have seen a radical change in the DOS world: Windows is now mainstream."

Excel 3.0 for Windows is available immediately, while editions for the OS/2 Presentation Manager and Apple Computer, Inc. Macintosh platforms are expected by midyear, Microsoft officials said.

Cambridge, Mass.-based Lotus, until midway through last year, had pointedly ignored Win-

dows in favor of developing for OS/2. While the firm is now readying a Windows spreadsheet, early Excel 3.0 assessors said it may arrive too late. "In a Windows environment, there really is no reason to stick with Lotus," said Steve Birgfeld, a manager at Martin Marietta Corp.'s information systems group in Chantilly, Va. "Excel 3.0 is a real nice addition. Its enhanced graphics are terrific."

Stiff competition

Analysts said the Microsoft action puts stiff competitive pressure on Lotus, which is also struggling to deflect a price-cutting campaign by Borland International, Inc. designed to sell to existing Lotus users. "The spreadsheet advantage is now in Microsoft's court," said Peter Rogers, an analyst at research firm Robertson Stephens in San Francisco.

Excel 3.0 also makes an aggressive move to woo away Lotus' 1-2-3 users by offering a dialog box that allows users to enter 1-2-3 commands into Excel. The Help box then describes the Excel equivalents or simply performs the functions.

The Excel update incorporates several new elements that

have been praised by early users:

- A tool bar that runs across the top of the screen and allows users to perform common operations such as adding up columns or formatting cell contents at the click of a button.

- A "solver" that aids in determining what mix of figures will best provide a desired result, such as what products to manufacture to maximize profits.

- The ability to collapse complex spreadsheets into an outline form.

- Support for linking and embedding objects between applications.

System requirements for Excel 3.0 include an Intel Corp. 80286-based or higher personal computer, 2M bytes of random-access memory, a hard disk with 3M bytes of free space and a graphics board and monitor compatible with IBM Enhanced Graphics Adapter, Video Graphics Array or Hercules Computer Technology. Excel 3.0 is priced at \$495; current Excel users can upgrade for \$129.

Microsoft also said that Excel 3.0 will be added to Microsoft Office for Windows by the end of the month. It includes Microsoft Word and PowerPoint and will retail for \$995.

1-2-3 users say Lotus is secure for the moment

BY PATRICIA KEEFE
CW STAFF

CAMBRIDGE, Mass. — Microsoft Corp.'s announcement of Excel 3.0 last week had Lotus Development Corp. officials scurrying to batten down the hatches. But despite counterstriking with aggressive advertising and product promotional packages, Lotus and its users insisted it is hardly curtains for 1-2-3 in a Windows world.

Jeffery Beir, director of product marketing at Lotus' Graphical User Interface Spreadsheet Group, claimed Excel 3.0 is playing catch-up by adding features that character-based 1-2-3 already offers in the DOS world.

Sheldon Laube, national technology director at Price Waterhouse, said it would be "hasty and premature" to make a decision on a Windows spreadsheet before seeing the "exciting products to come" from Borland International, Inc. and Lotus. "All the creativity there in the spreadsheet world has not been incorporated into Excel 3.0," Laube added.

By and large, Lotus users in-

terviewed last week concurred with Laube's assessment. "Lotus users are an awfully dedicated group, not to Lotus, but out of habit and ease of use. To have to retool for another package would just be terribly difficult," said Claude Delphia, a spreadsheet consultant who works with the 1-2-3 special interest group of the Modesto, Calif., IBM PC Users Group.

Lest Lotus become too complacent, some users, including Bob Holmes, a computer technology research analyst at Southern California Gas Co., suggested it would be prudent for Lotus to get beta-test copies of 1-2-3/W into users' hands as quickly as possible.

"Excel is clearly the front runner at the moment; Lotus will be between a rock and a hard place if they don't show 1-2-3/W soon," Holmes said.

"In the DOS world, it's still Lotus you have to displace, but it's Excel in the Windows world," agreed Rodger Bender, president of the New York Micro Manager's Association.

Gartner Group, Inc. analyst David Cearley said his firm's Lo-

tus clients have said they will stay the course as long as Lotus provides them with sufficiently functional copies of 1-2-3/W on which to compare with Excel 3.0.

"There is great pressure to get 1-2-3/W out," Beir acknowledged. But he estimated that only 30% of 1-2-3 Release 3.1 users are running under Windows, while 10% of the overall Lotus installed base is currently moving aggressively into Windows. "Microsoft does not have a solution for the 70% of the world that uses DOS," he said, pointing out that it took Microsoft six years to attain widespread acceptance of Windows.

Bill Machida, a microcomputer consultant at Infopro, Inc. in Fairfield, Conn., said he has not seen a mass movement among his corporate clients to Windows. Large Lotus users typically have built key applications around 1-2-3, and many are just not ready to retrain people, he said. So it is really difficult to justify moving to another product — no matter how good. "It's going to be a big stumbling block," Machida said.

The technology and training investment, coupled with the rapidly disintegrating state of the economy, were common themes stated by cautious Lotus users — even those committed to Windows.

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Source: Gordon Group 1980

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Unisys expects gloomy 1990 4-Q results

BY ELLIS BOOKER
CW STAFF

BLUE BELL, Pa. — Unisys Corp. will likely round out a dismal 1990 next week with the issuance of its fourth-quarter results. Analysts said they expect the company to post a loss for that period.

The amount of the shortfall, however, may depend on how much Unisys writes down for the year, effectively lumping its bad financial news into 1990 in hopes of doing better in 1991. Unisys would not comment, citing federal securities regulations.

"I think they'll throw in the kitchen sink and try to get as much out of the way as the accounts will let them," said Rick Martin, a computer industry analyst at Prudential-Bache Securities, Inc. in New York.

Analysts have been paying particular attention to Unisys' nearly \$4 billion debt load as well as the structure of its loan agreements.

A revolving credit agreement that could be crucial to the firm weathering continued financial problems includes a so-called net-covenant stating that Unisys' net worth (assets minus liabilities) must be at least \$3½ billion.

"At the end of September, they were at \$3.8 billion" in net worth, Martin said. Adding that the losses expected for the fourth quarter will push Unisys perilously close to the line, Martin said the company's executives "don't have much room for any mistakes."

Should Unisys fall below the net-worth threshold in the covenant, the banks could renegotiate it in a variety of ways, including demanding a different interest rate, offering a smaller loan or securing the loan to an asset. Lastly, the banks could walk away.

Martin said he expects Unisys to post about a \$35 million loss for the quarter and pay out another \$30 million in its pre-

ferred dividend, for a total loss of about 40 cents per share, or \$65 million.

"My hunch is 50 cents per

share, or \$85 million," said David Schofield, a technology analyst at Duff & Phelps Investment Research Co. in Chicago. That would give Unisys a \$520 million loss for the year.

Schofield will be watching for two other components in the fourth-quarter statement: how well Unisys revenue has held up and how much its business is off in Europe. In addition, Schofield will watch the company's gross margins, which he said have declined from 35% to 25% in the third quarter of 1990 and probably point to operating expenses increasing faster than revenue.

To get a handle on its operating expenses, Unisys announced last September that it would lay off about

5,000 people in 1991. Recently, the company has told analysts it may make still deeper staff cuts.

Martin said he believes that if Unisys makes progress on its asset sales — \$500 million to \$600 million total for the year — the underwriters for the revolving credit will likely waive the net-worth covenant.

For years, Unisys has operated with little cash on hand, preferring to take short-term loans, according to Martin.

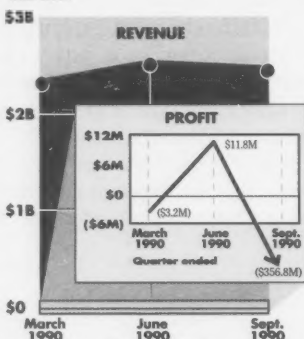
At any one time, Martin said, Unisys has \$600 million to \$800 million in these short-term loans, the majority coming from banks outside the U.S.

Should those banks balk, Unisys has a revolving credit line for \$1.25 billion through January 1993. The revolving credit, negotiated by a consortium of 23 banks, will not be needed unless the local banks refuse to make the short-term loans, Martin stressed.

The apparent economic recession will undoubtedly harm Unisys and other mainframe vendors because mainframe purchases can be deferred — at least temporarily.

Gloomy prospect

There was little for Unisys to cheer about in the first nine months of last year, and analysts expect another substantial loss will be reported next week.



Source: Company reports

CW Chart: Doreen St. John

AT&T, NCR await tender offer reply

BY MICHAEL FITZGERALD
CW STAFF

DAYTON, Ohio — The final count on AT&T's \$90-per-share tender offer for NCR Corp. should be in hand Wednesday, just before NCR's board holds its regularly scheduled meeting.

The tender offer expires at midnight tomorrow. While analysts said they expect AT&T will receive more than the two-thirds majority it needs to capture control of NCR, that would not necessarily cinch the deal.

NCR's board can still resort to a "poison pill" and certain antitakeover provisions in Maryland, where it is incorporated.

The Wall Street Journal

speculated last week that NCR may also adopt a contingent value rights plan, in which shareholders would be promised a large payout if NCR did not reach a target price by a specific date. However, NCR President Gilbert Williamson told reporters at a Massachusetts Software Council meeting last week that he was not familiar with that news article, and an NCR spokesman strongly denied it.

AT&T also hopes to announce the results of its request for a special meeting to oust a majority of NCR's board. AT&T needs a 25% positive response from shareholders to force NCR to call a special meeting, but removal of the board would require

an 80% vote.

NCR, meanwhile, is expected to announce third-quarter results today, leading some analysts to believe the firm may have excellent results to report. This could drive up the price of its stock. "I think that [NCR's] board, rather than saying, 'OK, it looks like you're going to win,' [is] going to make them win," said David Schofield, an analyst at Duff & Phelps Investment Research Co. in Chicago.

Strategies win praise

NCR's recently announced hardware and software strategies, entitled Open, Cooperative Computing and System 3000, seem to be on track. Next Mon-

day, it plans to announce Top End, an on-line transaction processor (OLTP) for the Unix operating system that analysts have praised.

"Top End looks like it's going to be a very complete transaction processor with a lot of interoperability," said Jim Johnson, chairman of the Standish Group, an OLTP research firm in Hyannis, Mass. Ironically, the only major Unix OLTP existing today is AT&T's Tuxedo, and analysts said they expect that one of the two products would be cut in a merger.

NCR product managers uniformly said talk of the merger has not slowed their development efforts. "If anything, [since the AT&T acquisition effort began,] we're even more fired up than ever to get it done and get it

out the door," said Randy Smerik, consulting analyst for the distributed transaction processing group at NCR's West Coast laboratory.

AT&T's Computer Systems Division, meanwhile, appears to be preparing itself for a merger, in line with comments made by division head Robert Kayner [CW, Dec. 24/Jan. 1].

On Jan. 1, AT&T brought its 1,500-strong warehousing, manufacturing and distribution staff into the Computer Systems Division, increasing its size to 8,500 and making it essentially an autonomous organization. The firm is also laying off employees in its sales organization.

Midwest bureau chief Ellis Booker and senior editor Nell Margolis contributed to this report.

Layoff

FROM PAGE 1

database and distributed network on the VAX platform, deals with DEC in two capacities, Stella said: as a strategic systems vendor and also as a large customer. "If they fell off the face of the earth, it would be a disaster for us," Stella said. "But I think they're going to emerge as one of the strong survivors in the industry. The layoff just makes me think that even more."

Several users noted that the one fear they might feel in the face of a supplier's layoffs — fear of diminished support — does not apply in DEC's case, if for an ironic reason.

"We've been unhappy with Ultrix support all along," said

Mark Scherfling, supervisor of Unix and communications support at Waltham, Mass.-based GTE Laboratories, Inc. "DEC's people are always hard to find and not always helpful when you find them," he said.

Nevertheless, according to Scherfling, DEC technology has justified GTE's investment in a difficult corporate relationship and will continue to do so. "I see these layoffs as an unfortunate sign of the times, not a sign of something wrong at DEC," Scherfling said.

Layoffs may help

Some users viewed the layoff as leading to benefits instead. "I sense that while DEC is having to lay off staff, downsize and make changes in the organization, there is still a long-term

view of where they want to go," said Paul Stiemann, associate vice president of computing and information services at the University of Pittsburgh.

Some analysts, however, failed to share Stiemann's optimism. The layoff — resorted to, according to a DEC spokeswoman, after a voluntary severance plan announced last spring drew only about 2,500 takers — is aimed at reducing DEC's domestic head count by a total of 6,000. "That isn't enough," said John Logan, president of Boston-based Aberdeen Group.

A 6,000-person reduction, said Robert Herwick, an analyst at Hambrecht & Quist, Inc., "hardly makes DEC lean and mean. This move was necessary, but it isn't sufficient. And it isn't the last one we'll see."

Bay State blues

DEC's layoffs will be nationwide. However, company representatives conceded last week that the Maynard, Mass., firm's disproportionate operational presence in Massachusetts can logically be expected to result in a heavy hit on the Bay State.

The company said the firm will lay off as many employees as necessary, over and above continuing attrition, to achieve the corporate slimming it targeted last fall.

During the past three months, 2,500 DEC employees have opted for voluntary severance. "Nothing has changed since our September announcement except that the program will now be involuntary," a DEC spokeswoman said.

Employees departing under the involuntary severance plan will receive "substantially the same severance benefits they would have gotten had they left under the voluntary plan," according to a DEC spokesman. Cash amounts will be identical; health and dental benefits will be slightly less generous.

No plant closings are anticipated, DEC said.

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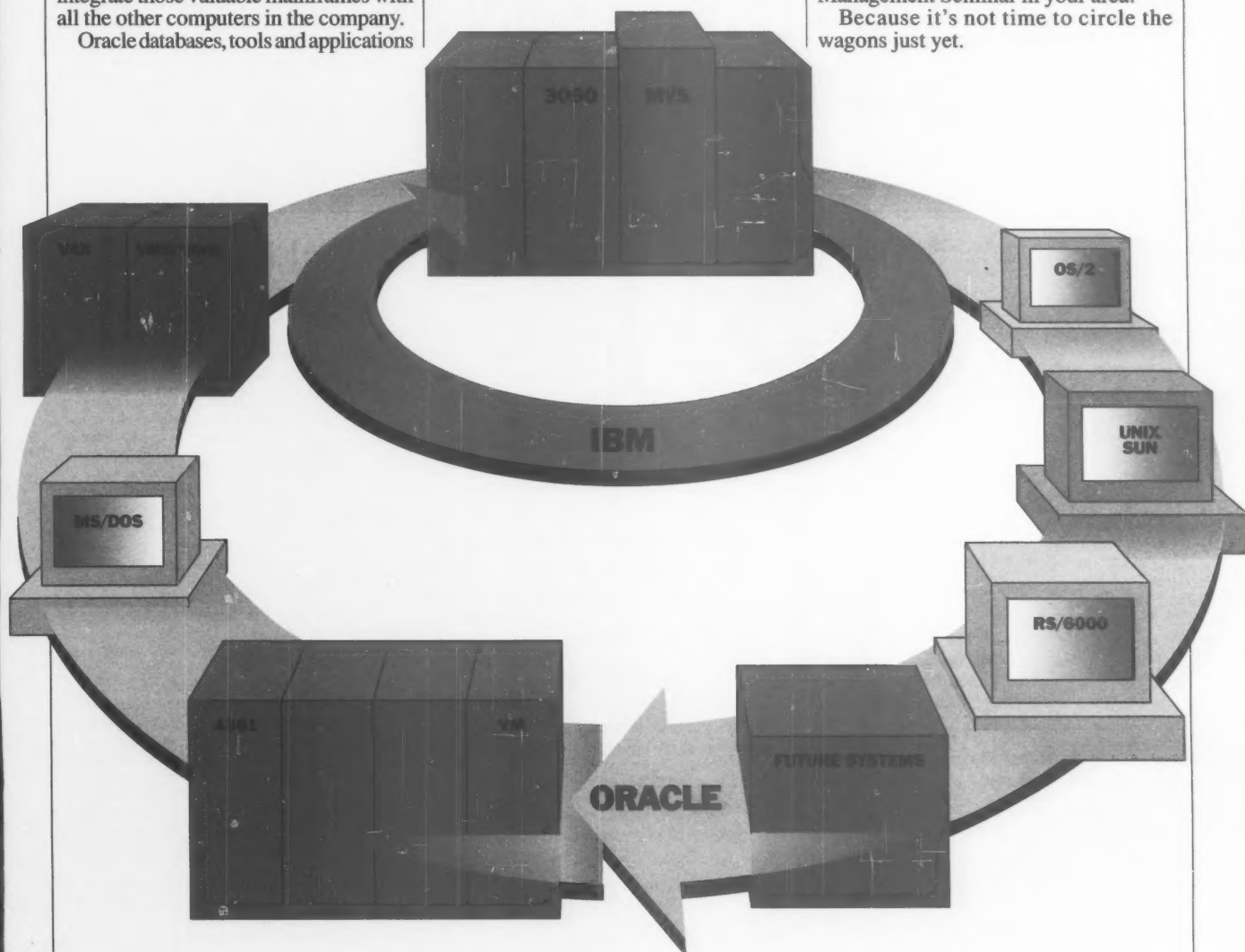
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*1990, Datamation/Cowen & Co. user survey.

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EDS wins large transportation outsourcing deal

BY ELISABETH HORWITT
CWI STAFF

MINNEAPOLIS — Electronic Data Systems Corp. (EDS) edged out IBM to win what is said to be the largest outsourcing contract to date in the transportation industry. Under a 10-year contract valued at \$500 million, EDS has taken over responsibility for maintaining, running and updating National Car Rental System, Inc.'s data processing and networking operations.

The agreement was signed in late December but was not officially announced until last week. On Jan. 1, National turned

its information systems and most of its 200-plus IS staff over to EDS.

Behind the company's decision to outsource is the hope of ensuring that it has the technological and human resources it needs to support its five- to seven-year IS strategy, according to John D. Livingston, National's chief information officer and executive vice president.

A widely acknowledged technological leader in the car rental business, National doubled its systems capacity in the past two years and expected to double or triple its capacity again to support that strategy, Livingston said.

While firms such as Merrill Lynch &

Co. have lost key technological personnel as a result of outsourcing maneuvers, only a couple of people have left National so far. As part of EDS' data center here, National's former IS department will have a "much bigger pyramid" of jobs to move into, Livingston said.

National will also be able to draft additional EDS people to work on special projects without having to make those people "part of its permanent cost structure," said Ron Benig, vice president of EDS' Transportation Business Unit. Conversely, EDS will be able to call on National's former IS staff members to work on other projects, he added.

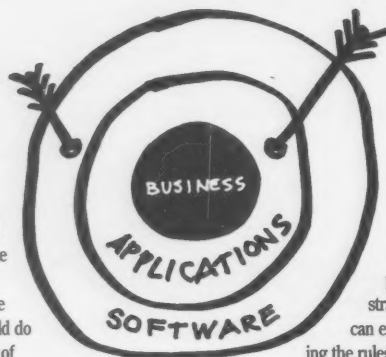
National also wants its outsourcing partner to provide a marketing outlet for its growing base of strategic software for the car rental industry, Livingston said. EDS has purchased exclusive marketing rights to both existing and future National applications, Benig said.

National and EDS plan to jointly develop applications and systems that will initially be installed at National and then marketed to other car rental companies, Livingston said. "I have a whole bunch of systems I am looking at, each of which will return multiple millions of dollars per year to National," he added.

National and EDS are already in the preliminary stages of developing a system that will allow cars to automatically transmit key information to a central computer via radio frequency link upon entering a National rental lot. The information will be collected and transmitted by a computer chip installed in the car and will include the mileage reading, gas level and maintenance status, Livingston said. The system will be used not only to speed up the car return process but also to better control how "these \$15,000 assets" are assigned, processed and maintained by individual rental outlets, he added.

National, an IBM shop, chose EDS over the computer vendor primarily because "EDS seemed to want [the contract] more than IBM," in addition to "giving us everything we wanted both in systems support and in marketing," Livingston said.

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DEC announces Unix CASE tools

BY MARYFRAN JOHNSON
CWI STAFF

MAYNARD, Mass. — Digital Equipment Corp. extended its Cohesion software development environment with graphical Unix-based tools for computer-aided software engineering (CASE) last week.

DEC Fuse is an integrated group of back-end CASE tools for programmers to use in debugging, coding and testing. The product runs on reduced instruction set computing (RISC) Decsystem platforms under Ultrix. It is expected to be available in March at \$1,500 per workstation seat.

DEC Fuse supports the Motif user interface from the Open Software Foundation, "hiding" the Unix system commands. DEC Fuse is intended to increase programmer productivity by including popular Unix utilities in the one product.

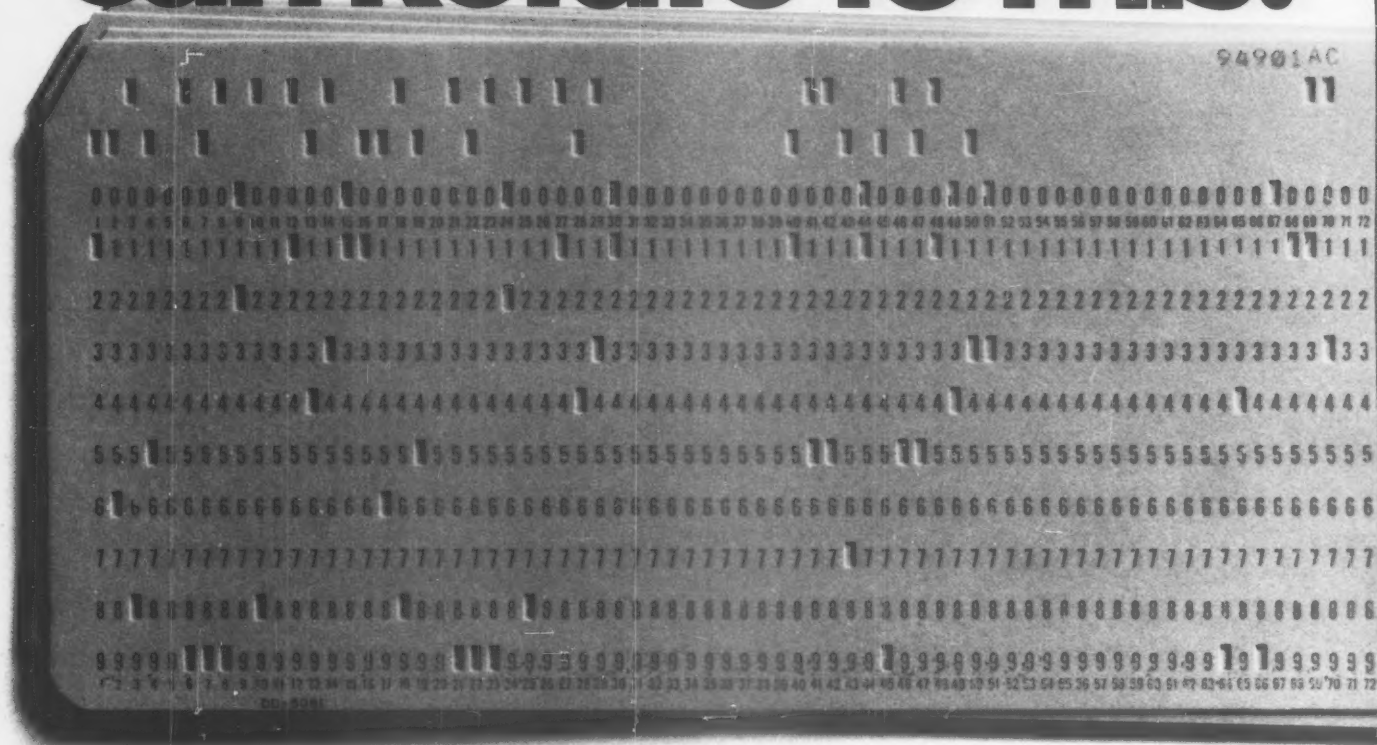
"Many people have trouble working with a very confusing grab bag of utilities that don't interface well with each other," said Stuart Woodring, an analyst at Forrester Research, Inc. in Cambridge, Mass. "DEC is certainly addressing one problem in offering a variety of associated development tools under one overall umbrella structure."

DEC Fuse is the first product to be produced through joint research and development between DEC and the Brown University Industrial Partners Program.

DEC officials said they plan to move the Vaxset programming tools — renamed Decset — from the VMS platform to Ultrix in the second half of 1991.

The company also introduced a suite of Ultrix RISC language compilers for Fortran, Pascal and C.

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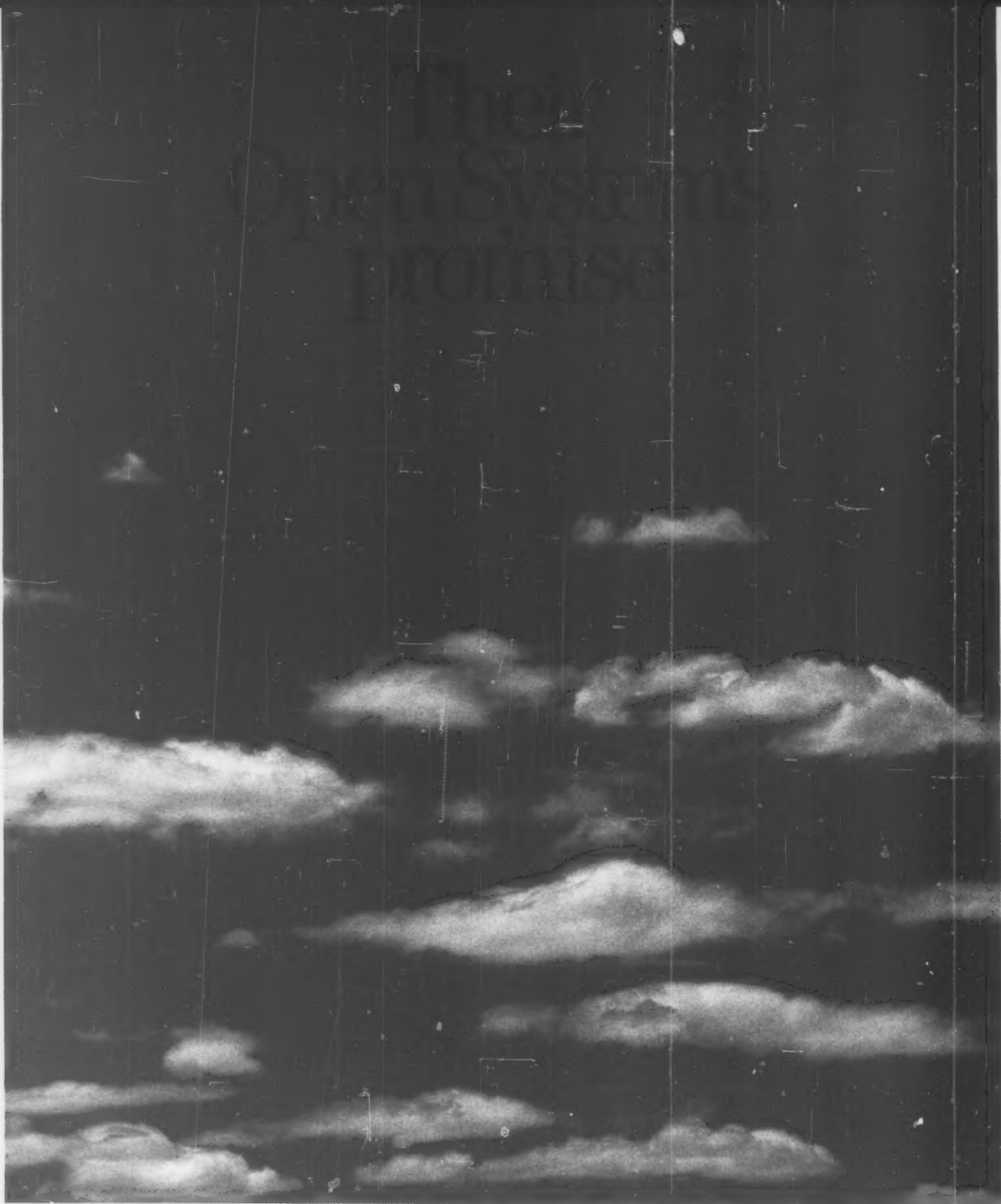


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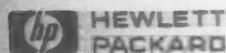
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**HEWLETT
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IBM reassigns several top-level execs

Lautenbach, Puckett and Guglielmi all get new posts in recent staff reorganization

BY ROSEMARY HAMILTON
CW STAFF

IBM is starting the year off with a reshuffled executive deck that gives new jobs to several managers, including a key post for Ned Lautenbach, who will now be responsible for IBM's Asia Pacific operations.

Bernard Puckett, former president of IBM's Data Systems Division, will take over for Lautenbach as the general manager of the Application Solution line of business.

In addition, Joseph Guglielmi, who had been president of the Application Solutions Division, the piece of the Application Solutions line of business responsible for Officevision, has also been reassigned. He will take on a newly created position of general manager, marketing and business development for the Personal Systems line of business.

Rick Martin, an analyst at Prudential-Bache Securities, Inc., said the executive moves appear mainly to be steps up or lateral moves into staff positions. He said

IBM routinely reassigns executives to either staff positions or line jobs. The staff jobs are often slots in which an executive can prove himself and then move on to a higher position in a line job, Martin said. A line job gives an executive responsibility for the overall operations of a business unit or division within a line of business.

Branching out

Martin said the Lautenbach move indicates that IBM wants him to gain international experience, which will boost his

overall credentials. All of the Asian business units will report to him, which is "a major job," an IBM spokesman said.

Puckett's new assignment appears to be a reward as it is a step up to general manager level from the presidency of the Data Systems Division. He had responsibility for the rollout of the new mainframe generation last year.

Because Guglielmi's position is a new one, it is unclear if it is a lateral move or a step up, Martin added.

Nicholas Donofrio, who had been president of the Advanced Workstation Division, will take over for Puckett. Anne-Lee Verville, who has been on a special assignment for Terry Lautenbach, an IBM senior vice president, will assume Guglielmi's Application Solutions Division job.

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More than one OS/2 on the way

BY PATRICIA KEEFE
CW STAFF

Users pining for a 32-bit version of OS/2 can rest assured that the project is still on target. IBM said it began rolling out OS/2 Version 2.0 to small groups of customers late last month and will continue to release the product in stages until it is ready for a formal release.

Separately, IBM is expected to announce a minor upgrade designed to address some issues with the forthcoming unbundling of OS/2 Extended Edition. It will be called OS/2 Version 1.4, according to U.S. sources and a report in London-based *PC Business World* that quotes an unidentified IBM source. IBM shipped the 2M-byte OS/2 Version 1.3 last year.

A spokeswoman for IBM said that OS/2 2.0 is on schedule. IBM released a statement on Sept. 17 committing to general delivery of a 32-bit OS/2 in 1991.

Mum on version numbers

As for OS/2 1.4, the spokeswoman said IBM would not speculate on additional version numbers. But industry sources said there will be a Version 1.4.

"I wouldn't be surprised if on the Extended Edition side there wasn't another 1.X version," one user said. The user speculated that as IBM unbundles Extended Edition, it will have to make some kernel changes before it can offer the pieces to run with OEM versions of OS/2.

Another source said the last time he heard IBM contemplating some new versions of OS/2, it had to do with providing application programming interfaces in the Extended Edition kernel for supporting object-oriented structures. For example, this extension would enable Data Base Manager users to modify database applications through objects.

John Dunkle, vice president at Workgroup Technologies, Inc., said the inclusion of object technology within OS/2 1.4 is extremely important to IBM because competitive alternatives, such as AT&T's Rhapsody and NCR Corp.'s Cooperation, already offer an object-oriented graphical user interface. Until IBM offers the same under OS/2, it will be considered a mediocre solution, he said.

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Quarterly Investment Returns

	Total by Fund Type			
	QUARTER1	QUARTER2	QUARTER3	QUARTER4
Aggregate Growth	\$17,916	\$18,135	\$17,373	\$19,444
Bond	\$13,272	\$16,561	\$23,390	\$23,279
Capital Accumulation	\$12,291	\$9,422	\$26,232	\$23,191
Cash Management	\$15,378	\$12,083	\$26,116	\$20,140
Governments	\$11,582	\$11,370	\$14,294	\$14,294
High Yield	\$7,633	\$10,892	\$23,196	\$14,294
Real Estate	\$11,925	\$13,757	\$23,196	\$14,294
Tax Exempt	\$10,567	\$10,725	\$16,196	\$14,294
TOTAL RETURNS				



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*I'm sitting in a
about my son
above our house
I told him that
hand; however,
some unknown
and my little boy
MAINTENANCE
come up with
actually happen.
switch is devoted
for the tip and he
fly right, Dad,
for me going to*

corner office on a round planet and I'm thinking
and how last night he looked at the crescent moon
and said, "Daddy, broken moon, broken moon." And
the moon would be fixed soon by a silent and unseen
the PBX that I bought for the corporation from
company might not be fixed any time soon at all,
who is only five said, "Dad, AT&T has a REMOTE
lab in Denver set up to detect any problems that might
their DEFINITY® System and fix them before they
You see, Dad, a full 1/3 of the memory of a DEFINITY
entirely to self-maintenance." And I told him thanks
looked up at me and said, "Straighten up and
because no silent and unseen hand is going to pay
college."

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The right choice.

Wang targets software at Windows environment

BY SALLY CUSACK
CW STAFF

LOWELL, Mass. — Wang Laboratories, Inc. announced a version of its document image-processing software, Open/image Windows 3.0, targeted specifically for personal computer users in a Microsoft Corp. Windows 3.0 environment.

The product allows users and developers to integrate image functions into both new and existing applications in the Windows 3.0 operating environment. It runs on Intel Corp. 80286-, 80386- and i486-based platforms and in several local-area networks, including those from Banyan

Systems, Inc., Novell, Inc., 3Com Corp. and IBM.

Martin Minjoe, information systems director at the San Jose Medical Center, a beta tester of the product, is now implementing the product in full production mode on a Banyan Virtual Networking Software network to relieve the paper backlog in the center's voluminous medical records department.

"Overall, Open/image fits in well for us," Minjoe said, citing the product's open architecture, customization capabilities and ease of use as beneficial to the medical records project. "It was not in our interest to move out of the open architec-

ture environment, and Open/image fits the bill," he added.

Open/image Windows 3.0 includes support for the Windows 3.0 graphical user interface, query by keyboard functions and image caching to speed up image retrieval and display. It includes 200 application programming interfaces that integrate image functions into Windows 3.0 applications.

The company also released Open/image for Netware, which integrates with Open/image Windows 3.0 to bring image capabilities to applications that are running on Novell's Netware 386-based network operating system.

According to Ira Morrow, vice president of technical planning at Shearson Lehman Brothers, Inc. in New York, the firm has been piloting the product as part of an imaging program that allows internal forms to be routed back and forth over typical Netware 386.

Wang offers two Open/image Windows 3.0 software packages: the first is a document image application version, which is priced at \$495, and the second is an image development kit, which offers a set of application programming interfaces and is priced at \$995.

Both versions are scheduled for shipment next month. A development tool kit for Open/image for Netware, priced at \$995, is also scheduled to be available next month.

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Sony RISC laptop to feature Unix

BY PATRICIA KEEFE
CW STAFF

SAN JOSE, Calif. — Sony Microsystems Co. introduced a RISC-based Unix portable last week, bundling in a variety of features such as AT&T's Unix System V, Release 4, and X Window System as well as the Open Software Foundation's Motif Version 1.1.

"Sony's use of the full Unix System V.4 allows us to satisfy both Unix System V and Unix BSD developers," company President James Mannos said.

Slated for delivery in March, the News 3250 Laptop Workstation starts at \$9,900. Mannos said the unit will be among the first to ship with Motif 1.1 and Unix System V, Release 4. An \$11,900, 406M-byte system is slated for May.

Sony just began selling a similar system in Japan and has been selling a complex instruction set computing chip-based luggage in Europe since last summer.

Just shy of 18 pounds, the latest system comes with a full-size LCD backlit monochrome, 11-in. diagonal screen with 1,120 by 780 pixels and "fake" gray scale. Clearly audible compact disc/read-only memory extended architecture-quality sound is also included.

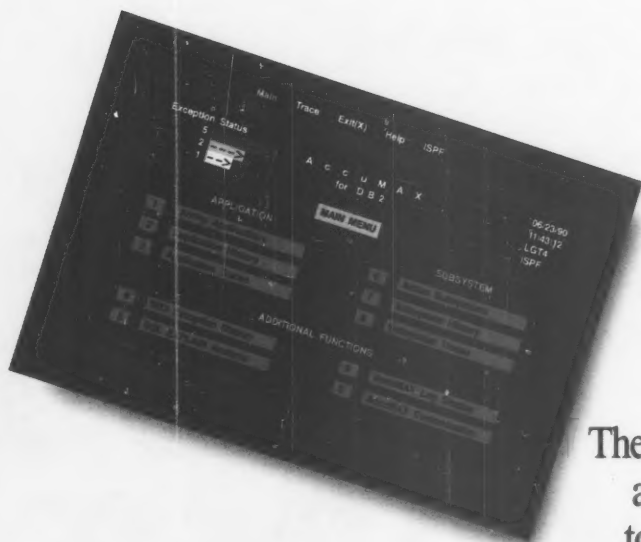
The News 3250 uses a Motorola, Inc. R3000 reduced instruction set computing (RISC) chip, which can run at 17 million instructions per second; a 20-MHz R3010 coprocessor provides 1.8 million floating-point operations per second.

Other standard features include "endless windows"; the ability to "iconize" a file for later retrieval; a 3½-in., 1.4M-byte floppy drive; and a built-in Ethernet card, small computer systems interface port and modem slot. Noting that Unix takes up a lot of disk space, Mannos said users would be guaranteed a minimum of 60M bytes with which to run programs.

Judith Hurwitz, editor of "Unix in the Office," which is published by Patricia Seybold's Office Computing Group, said Sony may be a little ahead of the market with its luggage. "The world isn't quite ready for a Unix portable," she said.

According to Hurwitz, the News 3250 "is a clear sign that Sony is starting to get aggressive about both Unix and the RISC market." She added that the box appears to be targeted at systems that are based on Sun Microsystems, Inc.'s Scalable Processor Architecture.

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ADVANCED TECHNOLOGY

TECH TALK

Smart-card challenges

■ A mass market for smart cards has been just around the corner for 20 years and is likely to stay there unless challenges of cost and standard-setting are overcome, according to a new study by Frost & Sullivan, Inc. The notion that smart cards would eventually replace money and lead to the cashless society is not happening, the market research firm said. The cards and machines that read them are too expensive, and a lack of standards is an obstacle to widespread use of the cards.

Speedier SRAMs

■ Toshiba America Electronics Components, Inc. said recently that it has developed the world's fastest 1M-bit static random access memory chip (SRAM). The chip has an access time of 15 nsec, more than 25% faster than any other 1M-bit SRAM, the company said. Some 6.3 million elements, including transistors and resistors, are crammed on the 6.6mm by 13.3mm chip. That is the same level of integration found in 4M-bit dynamic random-access memory chips. Toshiba said the chip is also the first to store 16 bits of information at one time.

Mini meteorology terminal

■ Horizons Technology, Inc. said recently that it will begin work on a miniature meteorological observation terminal, a handheld device for entering and transmitting data to the National Weather Service. The company said it received a Small Business Independent Research award from the U.S. Department of Commerce to develop the terminal.

Japan on-line

■ Maxwell Online, Inc., an electronic information service vendor in McLean, Va., recently announced the Japan Technology database, which enables U.S. businesses to monitor Japanese technical literature. The journal abstracts, supplied by Scan C2C, Inc., are in English.

Is it real, or is it digitized?

Technical sleight of hand makes it possible to use computers for altering photos

BY MICHAEL ALEXANDER
CW STAFF

Desktop computers are magicians when it comes to altering photographs or even creating entire worlds using computer-generated images. It is a relatively simple trick, for example, to alter a photograph to put hair on a bald man's head or change a woman's eyes from brown to blue.

Virtual realities and a new offshoot that some call three-dimensional multimedia pose ethical challenges that go considerably beyond that of falsifying photographs, however.

With virtual reality and related technologies, people can be put into places where they have never been and objects can be made to take on lifelike qualities they never could have in actuality. Such technical sleight of hand is raising ethical issues that are now coming under close scrutiny by a growing body of experts. Should users be told whether what they are seeing in applications based on virtual realities is contrived or real? What standards of behavior should be applied to two or more users interacting in an artificial space?

"It has become a major subject of discussion," said John Latta, president of 4th Wave, Inc., a multimedia production firm based in Alexandria, Va.

The consequences of this remain unclear but could be serious, Latta said.

"What is significant in virtual realities is that when two people interact, if the rules aren't clear to both, one could

do psychological harm to the other."

In a computer-generated cyberspace, the rules of law and order are not clearly defined, partly because computer technology allows computer users to do things that are impossible in reality, Latta said. In an experiment involving two people, for example, one person was able to enter the computer body of another and take control of the other's actions. "Those kinds of things are verboten, but there is nothing to restrict that behavior," Latta said.

search in Los Gatos, Calif.

Telepresence is a form of virtual reality technology that permits a user to control and interact with an environment from a distance.

Laurel envisioned that a code of behavior will evolve about "the sorts of warranties responsible users should be making about our identities" in cyberspace. She also said that a professional code of ethics would arise, much in the same way that ethics prevail in broadcasting, journalism and other areas.



The lack of order in cyberspace is the "darker side of technology," and "we should not flinch when we examine computer-generated worlds," said Michael Heim, a philosophy professor at California State University at Long Beach.

The potential for deception using computers may be greater than with any other medium, said Brenda Laurel, managing director of Telepresence Re-

Laurel said she believed that the ethical issues will become less important as users become more sophisticated and more accustomed to the technology.

The technology to create computer-generated images realistic enough to be deceiving is probably 10 to 15 years away, said Michael Spring, a computer science professor at the University of Pittsburgh.

Survey looks at critical issues in technology

BY MICHAEL ALEXANDER
CW STAFF

When it comes to advanced technology, senior information systems managers are preoccupied with technologies that are more valuable to the IS organization than to the business at large.

That is one of the primary conclusions of a survey of 392 top IS executives conducted by Cambridge, Mass.-based Index Group, Inc. Fortunately, this tinkering with self-serving technology appears to be lessening slightly, Index Group reported in its fourth annual survey of IS issues called "Critical Issues of Information Systems Management for 1991."

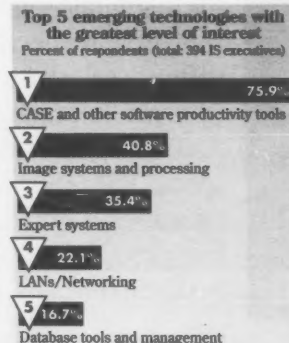
Computer-aided software engineering, image processing, expert systems, local-area networks and database tools were cited as the top five emerging technologies in which IS executives had the greatest level of interest.

It is encouraging to see image processing and expert systems among the

top five technologies because they play a more direct role in changing business processes than in changing internal IS

Of high interest

The pressure on IS to deliver higher quality applications faster is apparent as CASE and other productivity tools come out way ahead



Source: Index Group, Inc. CW Chart: Doreen St. John

work, said Robert Morison, vice president and director of the Prism research program at Index Group.


The remaining three technologies are not really all that new, but they are technologies that the executives feel most comfortable with, according to Morison.

"The average IS organization in a large company is populated with technophobes who would rather not introduce new technologies that are going to disturb the installed base."

The executives expressed only a passing interest in neural networks, voice recognition, supercomputing or handheld computers, all of which will probably have a profound impact on business processes in the next five years, Morison said.

Exactly half of the companies reported having a formal process for identifying and exploring new technologies. The IS executives said this process included advanced technology groups, task forces and steering committees, among other forms of technology-watching.

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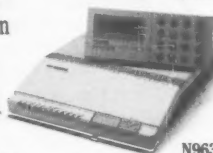
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EDITORIAL

Winds of change

IN AN ENVIRONMENT where layoffs are occurring in the tens of thousands every month, the news value of yet another round of reductions in force at any company is not high, as a rule.

However, when the nation's second largest computer company reverses a 34-year-old no-layoff policy and orders 3,500 "involuntary severances," now *that's* news, even though the number of people DEC said it would cut last week represents no increase to previously stated intentions to reduce its bloated work force.

To the thousands of DEC's very loyal customers, does this radical change in policy signify any new direction that will lead the company away from the downward spiral in which it has been inching down for the past several quarters? Or is the company destined to suffer a fate similar to its minicomputer brethren Wang and Data General, where layoff has followed layoff, and the companies have been essentially recast by the end of a painful process?

Clearly, no one knows the answer, but it is safe to say that DEC has a lot of different forces and weights stacked against it.

For one thing, the layoffs will immediately trigger a certain unease among DEC's 120,000 workers, an unease that comes from the realization that the next regular paycheck could be the last. Will any preoccupation with job security affect the performance of these workers? Would it affect yours?

Also, it would be surprising if the layoffs stopped at the levels stated last week. We're in a recession, DEC's revenue per employee isn't up to the levels of other big hardware makers, and most of its hardware competitors, including IBM, have already made comparably large cuts in their work forces.

As with DG and Wang, DEC's bread-and-butter minicomputers just aren't selling like they used to, nor will they ever again. The market's direction is toward smaller, cheaper and faster — a direction that has not been compatible with DEC's sales history.

However, many experts say they feel the biggest force against DEC is DEC itself, specifically its cumbersome internal management structure. As the story goes, ask a professional at DEC for the name of his boss, and you'll get three or more names back.

In an era when management structures across the board have been trimmed of midriff bulge with the intention of getting decision-making power closer to the seat of the business units themselves, observers say DEC's structure remains a matrix that greatly slows its ability to react to market changes.

Other company leaders before Ken Olsen — John Akers at IBM and Rick Miller at Wang, to name two — have found that the most important item on the change agenda is corporate cultural change. That is never easy, never painless and perhaps never so necessary as it is at DEC today. Rescinding a no-layoff policy does not a cultural change make, but it could be a starting point.



LETTERS TO THE EDITOR

Proving racism

The response by Mr. Ackerman, "Racial Tension" [CW, Dec. 10], to "IS: A tough road for minorities" [CW, Nov. 19] is an example of the racist attitudes prevalent in America, not just in information systems. The standard response is deliberate and, as in this case, elaborate obfuscation. Blacks are discriminated against in all aspects of life in this country. Nevertheless, whenever a black person complains about discrimination, the retort from the racist corner is "absurd," "where's the proof?" "reverse discrimination," "ludicrous" or "nonsense."

The *Harvard Business Review* article "Black managers: A dream deferred" [HBR, May-June 1986] points out clearly that white managers do go out of their way to sabotage the careers of black and female managers. Ms. Wilson's statements about the problem are clear, straightforward and obvious in light of such studies.

Kenneth N. Brown
Advanced Research
Consultants, Inc.
Wilmington, Del.

EDI-TV

In "Turning the tide with technology" [CW, Dec. 24/Jan. 1], you captured the essence of the problem of slow electronic data interchange (EDI) implementation in the broadcast business, but it is incorrect to characterize myself, WGN-TV, any of the other Tribune Broadcasting Co. television stations or TBC Plus as opposing EDI.

TBC Plus and our six major-market television stations regularly exchange contract and bill-

ing information with many of our advertisers, our unwired network affiliates and sales organizations. We also encourage the use of such systems for the efficient handling of many routing transactions in our industry.

What would be correct to point out is that we oppose the potential for EDI to be used to foster the commodity sales of our air time. Such a use would rob our potential advertisers of the ability to learn of the many value-added enhancements that expand the worth of products when they are seen or heard on our outstanding group of radio and television stations.

Bill Murray
Director, Information Systems
Tribune Broadcasting Co.
Chicago

Babble-on

The letter from Thorne Perry regarding Glenn Rifkin's article "Abort, retry, ignore — truth about the PC age" [CW, Dec. 3], poses a rhetorical question to Rifkin about his whereabouts for the past five years in relation to the Information Age. I wonder where Thorne has been for the past 25 years.

IBM JCL doesn't compare with PC-DOS. JCL isn't an operating system; it's a mainframe bat file. The appropriate comparison would be DOS commands and TSO. "Abort, retry, ignore," even with its inconsistent results, would be good news in some software that gives no clues at all about how to extricate yourself from its clutches. And just when you think you've figured it out, it doesn't work the same on the next screen.

User-friendliness is definitely in the eye of the beholder. The reason for Rifkin's perplexity is

that personal computers are friendly to hackers who never had to design and develop complex systems under harsh conditions. There is no "access barrier" to those with nothing better to do than run algorithms that endlessly compute passwords.

Frank McCormick
Port Hueneme, Calif.

Not the CASE

Your announcement of CGI Informatique's acquisition of Yourdon, Inc. [CW, Dec. 10] contained a few inaccuracies. First, the number of users, quoted as 250, is both ambiguous and incorrect. Yourdon has trained approximately 250,000 users in our method since the company was founded in 1974. The second inaccuracy is the common misconception that the Yourdon Structured Method (YSM) "approaches CASE from a process point of view." The latest version of YSM, called YSM 3.0, has a powerful integration of data, dynamics and function. YSM 3.0 supports a full range of information-based techniques such as enterprise modeling, the entity relationship attribute approach and entity life-cycle modeling.

John M. Baker
Director of Methodology
Yourdon
Raleigh, N.C.

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor In Chief, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail: COMPUTERWORLD. Please include a phone number for verification.

Battling the technology giants

T.J. RODGERS



The most dangerous threat to U.S. entrepreneurs today comes not from across the Pacific but from right here at home. In both insidious and overt ways, large companies that have lost their technological edge are using legal means to threaten some of the most vital and vibrant U.S. companies.

This trend not only is dangerous for the targeted companies, but it also weakens the fiber of U.S. competitiveness. The irony is that loss of competitiveness is the rationale used by the attacking firms that claim our technology leadership is at stake.

These legal wranglings pose a key question: Do we want big companies to dominate our supplier base at the expense of entrepreneurial companies?

To answer this, let's take a look at a bit of history. Two of the original players in the static random-access memory market, Intel and Advanced Micro Devices (AMD), lost their technology edge years ago and gave away the static RAM market share to the Japanese. During that time, both Integrated Device Technology and Cypress Semiconductor built successful \$100 million U.S. static RAM businesses. In this key product area, smaller entrepreneurial companies have been the only

Rodgers is president and chief executive officer of Cypress Semiconductor Corp. in San Jose, Calif.

ones that are keeping the U.S. in the game.

A similar situation exists in the programmable logic device (PLD) market. While AMD and Texas Instruments forced power-hungry bipolar PLDs on customers up until two years ago, Altera, Xilinx, Lattice and Cypress brought low-power CMOS erasable PLDs to market.

And in the microprocessor arena, the situation is even more black and white. As Intel and Motorola jammed outmoded 8086 and 68000 standards down computer makers' throats, the microprocessor landscape radically changed, and companies such as Sun Microsystems, Mips, Cypress, Integrated Device Technology (IDT) and Performance Semiconductor began offering designers higher performance, multisourced reduced instruction set computing (RISC) alternatives.

Had the big companies succeeded in snuffing out the entrepreneurial offerings, computer designers would have been forced to live with obsolescence as their only alternative.

The current cancer of useless litigation presents major hidden costs in the form of squandered time, dollars and creative energy. While, at first blush, each of the lawsuits may sound unique, on closer examination, these meritless suits fall into two basic categories.

One type is geared toward preventing small companies from hiring talented individuals from the large companies. Though they are never successful, these suits waste good man-

agement time and keep a raft of lawyers busy. The second category — far more insidious — is designed to eliminate competition. The good news is that both types rarely succeed.



Scott Matthews

Take a look at Cypress' record in these suits: 22 wins, no losses and three pending (with AMD, National Semiconductor and TI). Cypress has never paid a cent in these meritless cases.

While shrouded in a guise of intellectual property rhetoric, these lawsuits are a straight greed play. Look at TI, which is trying to manipulate the courts to gain a 5% surcharge on all Japanese semiconductors, based on the Kilby patent, plus a 10% sur-

charge on all dynamic RAMs. Through their legal department, which is, in effect, a profit center, TI is pulling in millions from competitors and customers alike.

In its latest legal foray, TI is trying to squeeze a 3% surcharge from Cypress, IDT, LSI Logic, VLSI Technology and An-

alog Devices through enforcement of a plastic packaging patent that dates back to 1963 and was filed in connection with a transistor package.

Should we pay to prop up TI or any of the other sagging giants of the electronics industry? The bottom line is we're fighting the suit, and we plan to win.

Another familiar type of legal irritation is monopolistic litigation. AMD has sued Cypress in an effort to shore up its sagging

PLD business. This suit is clearly aimed at eliminating competition. If they win, this would raise prices and reduce the product types available to customers. Finally, let's look at that private club in Texas — Sematech — that was funded ostensibly to bolster U.S. competitiveness in semiconductor technology. Sematech's board of directors — all but two from billion dollar companies — created an unfair dues structure, which effectively bars smaller companies. The result was that only 14 of about 300 U.S. semiconductor companies joined the consortium that was intended to help everybody.

Sematech was founded based on the scare tactic that the Japanese would control the semiconductor equipment industry. The irony is that Sematech is now trying to do just what it was founded to prevent: It is negotiating for exclusivity when it awards contracts to equipment companies. Furthermore, Sematech has begun to award contracts to its own members — a highly questionable practice.

Two-hundred million dollars is flowing into Sematech, but millions are flowing back to member companies in a closed loop that does little to benefit the U.S. semiconductor equipment industry and does real damage to some competitive entrepreneurial companies.

The unprecedented attack on entrepreneurs by large companies presents a clear danger to U.S. technological competitiveness. It's far past time to recognize that the only way to compete is through hard work and competence. And competence is one quality that can't be legislated. No "Ice Age Prevention Act" will save the dinosaurs.

Results speak louder than explanations

GLEN HUGHLETTE



Both Ron Brzezinski's article, titled "Plug the Understanding Gap," and a editorial on "Self-justification,"

which appeared in the same issue [CW, Dec. 3], suggest that a chief information officer should spend as much as 40% of his time validating his existence with key senior business managers.

The articles recommend that spending time in informational meetings with business managers will allow the CIO to create greater awareness of and generate support for the information

Hughlette is the president of Information Engineering Systems Corp., a CASE consulting firm in Alexandria, Va.

systems department's mission and needs. According to the authors, "closing the understanding gap" will increase the likelihood of peers and business management supporting the CIO's requests for funding "the next technology wave."

It is simply nonproductive for a CIO to spend nearly half his time justifying his existence in face-to-face meetings with executive management. The measure of success for an IS department should be no different than for any other functional area within a corporation.

The department head who has implemented a program resulting in a productivity, profitability or market share increase is likely to receive favorable consideration for new departmental expenditures. Similarly, the CIO who implements systems that

are instrumental in achieving corporate goals will be successful when attempting to increase expenditures and introduce new technology. Nothing succeeds like success.

Simply put, successful IS development does not require the business to understand more about the CIO or information technology. Rather, the IS department needs to deliver systems that respond to real business needs.

IS executives can never become true business experts. Nor can business users become expert in all facets of information technology. The key to success is to create a common language for business and IS so the two groups can effectively communicate their respective needs.

To bridge the communication gap, the CIO should adopt a structured methodology that provides the common language both groups can use. Replace the 40% time commitment for informal meetings with workshops designed to create business models that reflect the informa-

tion needs of the enterprise.

Such workshops would be enlightening to both business managers and IS professionals by showing them how the organization works and how various departments share information.

Furthermore, business data models jointly developed by business managers and IS professionals would provide a blueprint for systems development. They would contain all of the data and metadata required by the organization's IS department.

The development of such models represents a unique opportunity for the organization to reflect its strategic business plan in IS. Adopting a participative IS planning and development methodology will allow the CIO to produce quality systems that meet the business users' needs the first time around and reduce the cost of maintaining redundant data.

In addition, a methodology involving business managers and information users throughout the process will help build a consensus on prioritizing systems

development projects to meet the most critical business needs.

Finally, the business models developed in this way will serve as the basis for systems development activities to improve the business and achieve the company's goals. It is those activities that will allow the CIO to garner support for the next budget.

Think about how the following statements would sound to a CEO: "I plan to spend 40% of my time in the coming year in informational meetings with business managers to justify the mission and purpose of the IS department and our need to implement new technology," or "I am committed to spending 40% of my time this year working with business managers and users in workshops to effectively determine their information needs. This way, we can build systems to help the organization achieve its objectives, leverage its investment in information technology and create a significant competitive advantage."

Don't you really think he'd prefer to hear the second one?



"We've got a complete SAA system up and running, and it's hard to say who's happiest: our programmers, our users, our customers, or me."

Keith Sievers, VP/Information Systems and Treasurer,
Federal Kemper Insurance Company

Federal Kemper Insurance Company is a home and auto insurer who's found some insurance for themselves, against system obsolescence.

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Says Keith, "Under SAA, we're moving a lot of our processing from the mainframe to PCs, which offer flexibility and portability. And we see real benefits from a disaster recovery standpoint."

For users.

And do users like it?

"They ought to," says Mr. Sievers, "they helped us design it. SAA screens are sort of a personal thing, so it only made sense to include the people who'd be using them every day. Our old screens had acronyms tucked into every available space. The new ones are a lot easier to look at and understand, and everybody loves the mouse. It's less like work and more like fun."

And while multitasking doesn't mean much to the public, it's going to be a real plus for FKI's customers.

For customers.

"When policyholders call with questions, they want answers fast. And when our SAA system is fully implemented, they'll get them. Our representatives will be able to solve problems on the spot just by popping a new window onto the screen. Instead of 'I'll get back to you later,' they'll say 'Here's the answer right now.'"

Keith Sievers has other reasons for liking SAA, especially since MIS isn't his only job. He's also the company treasurer.

"We wanted a leading-edge system that would still be leading-edge five years from now, a base we could build on, something we could enhance with AI, voice or image technology, but without having to toss out what we already owned. People ask questions about SAA, but of all the options we explored it was easily the *least* questionable."

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SYSTEMS & SOFTWARE

COMMENTARY

Maryfran Johnson

DEC fees buy a headache



It sounds too silly to be real — like paying for a brand-new car when you've only changed the tires.

Yet after 10 years of allowing users to transfer their VAX/VMS operating system licenses at no charge when they upgraded their machines with used CPUs, DEC put on the piper's hat and demanded to be paid.

There was no public announcement, no notification to resellers, no warning to users.

DEC sales people just started telling certain customers — those who upgraded their machines with CPU boards purchased on the secondary market — that they owed DEC the full value of a new operating system license.

Surprise, surprise.

Once the Digital Dealers Association got wind of this last month, DEC got an earful from irate resellers and confused customers. So now the policy is being reconsidered, with a "clarification" expected by Feb. 1.

"The consistent message I've gotten from customers is they would like whatever policy we have to be clear and fair," said Pat Spratt, manager of software business practices for DEC in Nashua, N.H. "The clarity is what customers are asking for most of all, because we've had some very ambiguous policies in the past."

The ambiguous policy at work here is a dusty old thing, Continued on page 34

Unmasking Unix's many faces

ANALYSIS

BY JOHANNA AMBROSIO
CW STAFF

Like brothers and sisters, different flavors of Unix can appear alike on the surface but have some striking dissimilarities on the inside. Information systems managers have adopted various strategies to deal with these differences, from programming tricks to using only one or two Unix variants.

The variations are most apparent when it comes to networking different kinds of Unix, users said. And it can be especially frustrating because IS managers may be unaware of potential inconsistencies. Many commercial enterprises have used Unix systems in applications that are only now being connected with each other and with the corporate mainframe.

"The flavors are sufficiently different, and it has been problematical," said Laurence Sikon,

director of advanced technology at Worldwide Express in New York. "The guidelines are evolutionary, and there's an awful lot of on-the-job learning."

DHL uses AT&T Unix System V as its standard. But even with this, Sikon said, different System V-based versions implement communications protocols differently. So using Transmission Control Protocol/Internet Protocol or X.25 to tie together Unix variants is not all that simple. The differences come out in the types of network services available for one or the other Unix systems and in systems administration functions.

Other difficulties come with trying to move applications from one Unix variant to another.

While Unix has made its reputation as a portable operating system that allows applications to be moved easily from one system to another, the reality is that sometimes it is not all that painless to accomplish, users said.

The level of porting complex-

ity depends on the specific types of Unix involved, how deeply into the operating system the application goes and which Unix calls the application uses. If these are the generic system calls that are common to all Unix variants, the application is indeed portable. But if the application uses a vendor-specific call, then it will take more work to move the application to another platform. So some IS shops use only the generic Unix systems calls when programming.

Cutting support

Others are taking an entirely different tack. Pearle Service Group in Dallas is reducing the number of Unix variants it uses. "We're getting out of the business of supporting different Unix systems," said Colby Springer, vice president of information services. The company currently has systems that run IBM's AIX and versions of Xenix and Unix from The Santa Cruz Operation. During the next 18

months, the company will switch entirely to SCO Unix for its point-of-sale system deployed in its retail stores nationwide.

"We felt long-term there would be problems in having different versions," Springer said. "There's a potential for significant upgrade problems."

General Motors Co. in Detroit is adopting a similar strategy by reducing the number of Unix vendors it uses in its "C-4" program, a five-year plan to tie various computer-aided engineering departments and manufacturing plants together.

GM will buy Unix workstations from only four vendors: IBM, Digital Equipment Corp., Hewlett-Packard Co. and Sun Microsystems, Inc. "We're trying to restrict the set of things we have to deal with," said Patricia Amaranth, C-4 communications manager. She said GM chose those vendors because they comply with de facto standards such as Posix and the X/Open Portability Guide.

IS shops will likely increasingly rely on those standards as they seek to make sense of their Unix systems, according to Sikon.

DG users concerned about software quality

BY SALLY CUSACK
CW STAFF

The North American Data General Users Group (NADGUG) recently posted the results of its annual user survey, prioritizing user concerns regarding products, services and the company's long-term financial viability.

"This is by far the most comprehensive survey we have ever done, and this year there was a big shift in user concerns," said Greg Farman, executive director of NADGUG.

The survey was distributed to 4,000 Data General Corp. users and received 813 responses. The No. 1 concern among the users was the continuation of product software quality and availability. The No. 2 concern was unsatisfactory field service and support.

In past years, field service concerns would typically rank at the top of the list, Farman said. He added that this year was the first time the question of the vendor's financial viability was

Continued on page 34

Issues of contention

A recent survey by the North American Data General Users Group ranked the following issues in order of user concern:

- Continuation of software quality and availability
- Service and support
- Continuity for proprietary line of MV computers
- Pricing
- Sales force (needs to increase response to user inquiries and become more involved in DG user communities)
- Connectivity
- DG's viability and survival
- Maintenance contracts (not price-competitive with third parties)
- Doing business (needs increased administrative efficiency)
- Marketing direction
- Industry marketing (needs more vertical industry market support in the field)

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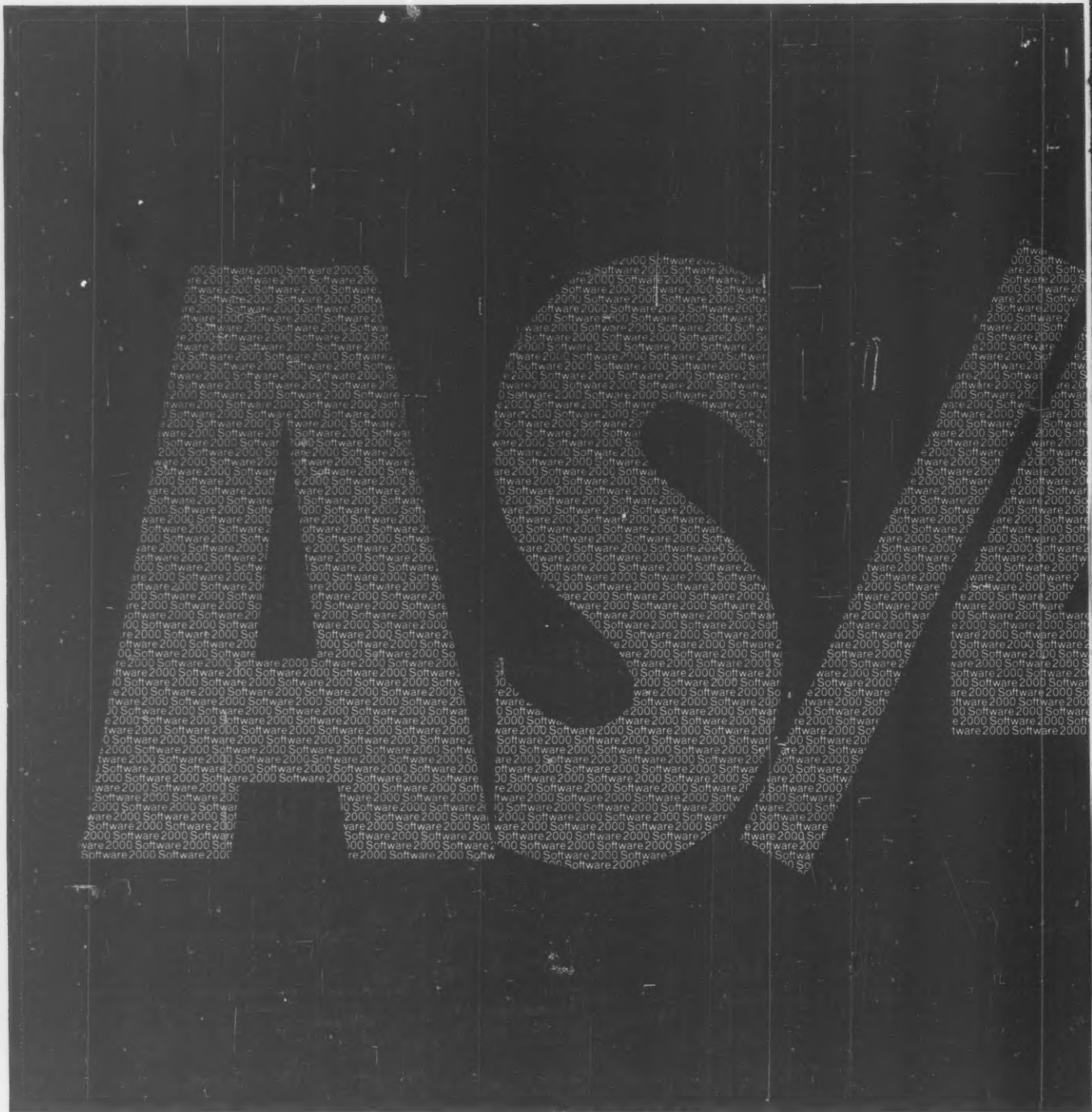
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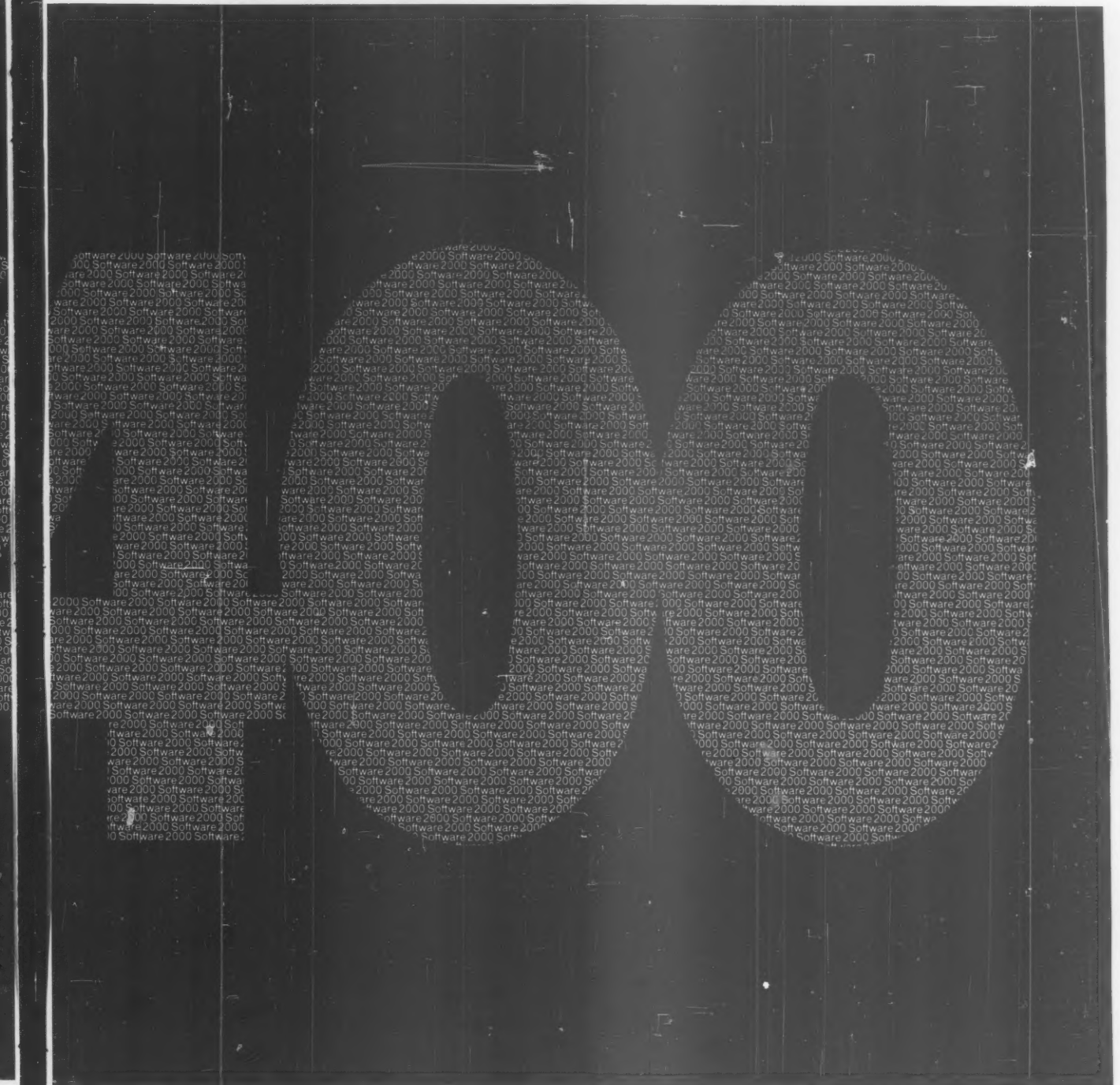
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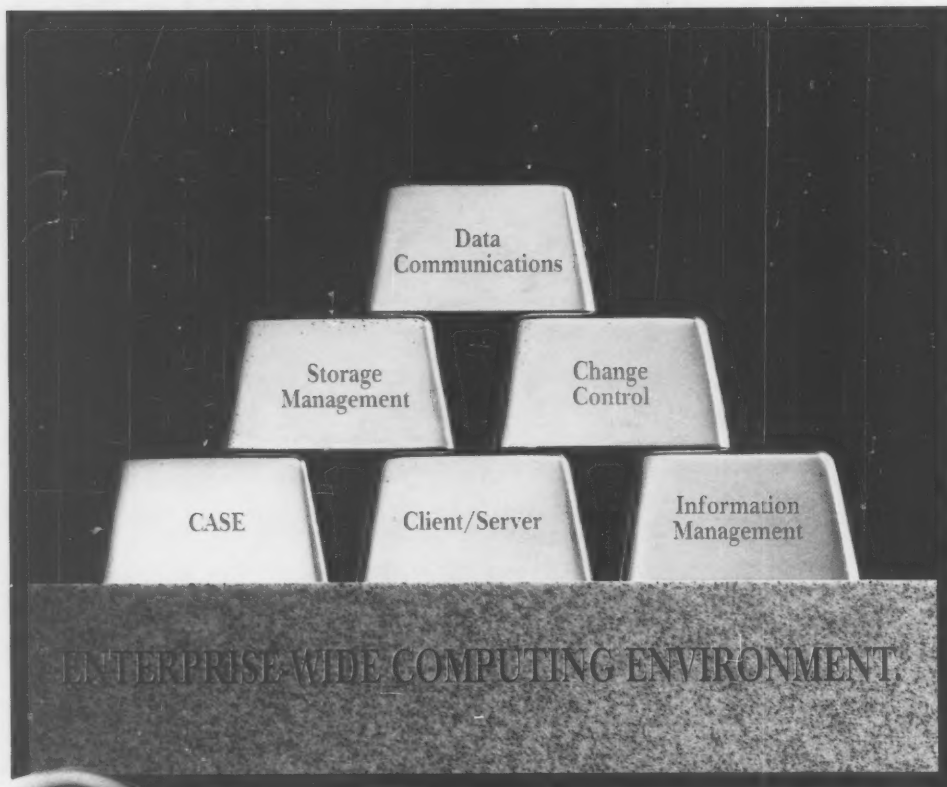


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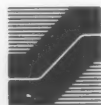
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Pac Bell mainframe takes specialist's role

ON SITE

BY JEAN S. BOZMAN
CW STAFF

PLEASANT HILL, Calif.—When Pacific Bell publicly launched a voice-mail service offering called the Message Center last month, the company tried something different behind the scenes.

Pacific Bell decided to leverage general-purpose computers rather than the dedicated telephony equipment traditionally programmed to support such services. In doing so, Pacific Bell sought the flexibility to modify the fledgling voice-mail service as it went along and greater speed in deploying future applications.

The messaging system is being marketed as an alternative for telephone answering machines at consumers' homes. Dedicated computer equipment will continue to be used for other applications and at some of the California phone company's large customer sites.

"We're offering a new type of hybrid public/private service," explained Bill Stout, director of technology planning at Pacific Bell's Information Services Group here. "Our architecture says we'll have a mass-market

platform [the A17 mainframe], using the general-purpose computer and a series of small-scale customer-premise equipment for special situations."

The voice-mail service uses a Unisys Corp. A17 computer to support thousands of "mailboxes" that hold phone messages. A Unisys database, DMS II, creates the logical "mailboxes" and tracks incoming phone calls. Pacific Bell expects to create hundreds of thousands of mailboxes but declined to say exactly how many customers have signed up for the new service.

Pacific Bell's packet-switched network will allow the new voice-mail system to communicate with existing voice-mail systems of different designs.

The Unisys system was designed to grow as demand for services increases. "We decided to go with a large-scale computer system because of its economy of scale — and the ability to share one access network among different types of customer service applications," Stout explained. If extra capacity is needed, the A17 could be reconfigured to

hold more CPUs or, more likely, upgraded to a higher capacity A16. While Pacific Bell did not disclose the price of its system, Unisys said similar A17 systems would cost \$8 million or more.

The phone company's move to a four-processor Unisys A17, which was installed here in October, is part of a larger trend to

support special applications.

In the last year, Unisys began selling its A17 to telephone companies as part of a packaged system called the Network Applications Platform. One other early Network Application Platform site is a US West telephone switching center located in Bel-
lingham, Wash.

Stout said Unisys had created special hardware modules, called Voice Interface Modules, that connect the Network Application Platform units to standard telephone switches and T1 multiplexers.

Software developers here programmed the voice-mail application in Linc, a fourth-generation language from Unisys. The software is a combination of custom and off-the-shelf Unisys programs. In the future, Stout said,

he plans to add store-and-forward facsimile capabilities to the system. He said he is also considering the addition of a Unix hardware subsystem when Unisys provides it.

Despite two years of development and months of testing, Pacific Bell's Message Center

launch was marred on Dec. 21 by a three-hour outage caused by the failure of several hardware components, a Pacific Bell spokesman said. The outage was corrected by a swap-out of the faulty components, and users will receive a \$4.95 credit on their December bills — equal to

WE'RE OFFERING A new type of hybrid public/private service."

BILL STOUT
PACIFIC BELL

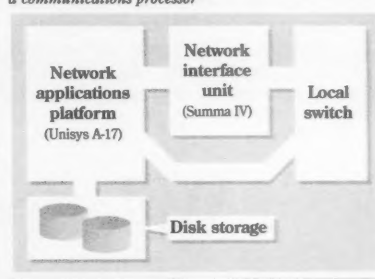
the monthly charge for their voice-mail service.

At first, Pacific Bell's A17 will support the firm's new voice-mail service for residential customers. But eventually, the A17 will take on the task of running Pacific Bell's business voice-mail service.

A second voice-mail hub will be placed in suburban Los Angeles later this year. Pacific Bell did not disclose plans for any other voice-mail hubs. Future applications that could be launched on the Network Application Platform include voice-interactive database inquiry, on-line airline reservations and mail-order requests by phone, a Unisys spokesman said.

Out of character

Pacific Bell's Unisys A17 is working in a new role as a communications processor



CW Chart: Marie Haines

ward using general-purpose computers as application platforms in the telephone industry, Stout said. For years, telephone companies have used a wide variety of computers, including those made by Tandem Computers, Inc., Amdahl Corp., Digital Equipment Corp. and IBM, to

General Automation unveils line of high-end processors

BY SALLY CUSACK
CW STAFF

ANAHEIM, Calif. — General Automation, Inc., an international supplier of database-oriented business information systems, software and services for the Pick and Pick/Unix community, recently released a series of business computers targeted at the midrange and high-end systems marketplace.

Dubbed the Advantage series, the initial rollout includes the midrange System A600, the upper end System A800 and the dual-processor System A800/2. According to the company, the basic System A600 is based on a 25-MHz Motorola, Inc. 68030 processor with 64K bytes of dynamic random-access memory.

The system also includes 16M bytes of memory, 376M bytes of disk capacity and 16 serial ports. It requires an uninterruptible power supply (UPS) and can be expanded to support as many as 256 users and 64M bytes of memory. It costs \$93,950.

The A800 is configured with a 50-MHz version of the Motorola 68030 processor and offers

64K bytes of caching DRAM, 64M bytes of memory and 64 serial ports, which can be expanded to accommodate 512 users. It is priced at \$164,950, and a UPS is required.

At \$375,950, the top-of-the-line A800/2 dual-processor computer includes two 50-MHz, 68030 processors with a combined total of 128K bytes of caching DRAM. The system requires a dual UPS and can be expanded to accommodate up to 1,024 users.

The vendor is also offering a feature enhancement kit that facilitates the upgrade of selected prior-generation General Automation and CIE Systems, Inc. computers to provide Advantage series technology. CIE Systems was acquired by General Automation in January 1990. The enhancement kit is priced from \$15,550 to \$61,950.

System A600 and A800 deliveries are scheduled to begin this month, and the A800/2 is scheduled to ship in June. Deliveries on the enhancement kits will start in April, the firm said. A year's worth of on-site maintenance is included in the price of the A600 and A800 systems.

BMC ships beta version of CICS utility

BY ROSEMARY HAMILTON
CW STAFF

SUGAR LAND, Texas — BMC Software, Inc. said it began beta-testing shipments of its CICS Integrity Series, a set of utilities that it picked up with the acquisition of Integrity Solutions, Inc. last year.

The software series, which is targeted at the IBM MVS and VSE operating environments, has been revamped and repackaged by BMC, according to Eric Brubaker, a director of product development.

He did not provide a general

availability delivery date but said he expected the beta testing to have a short run.

The company added an electronic vaulting package and an on-line installation tutorial to this series of data and disaster recovery tools. In addition, it streamlined the series, which has been made up of 11 modules, to a set of seven packages by removing redundancies and shifting some functions, Brubaker said.

For example, the functions of one module that was used to coordinate jobs for a recovery were added to the core components of

the series and will no longer be offered as a separate piece, Brubaker said.

Under the BMC label, the series will be made up of three modules, each of which has an MVS and a VSE version. These include Recovery for CICS, Recovery Plus for VSAM and Journal Manager Plus. The electronic vaulting package, called Data Vault, is available for MVS only.

Individual modules will be licensed separately and priced according to CPU size. VSE prices start at \$1,500, and MVS prices begin at \$2,000 per package, Brubaker said.

NEW DEALS

Unisys signs contract with Polish groups

In a recently announced venture, LOT Polish Airways and the Polish bank PKO SA have signed a \$5.7 million contract for two Unisys Corp. mainframes, two airline applications and two DCP/40 distributed communications processors.

Unisys will supply its Airline Revenue Enhancement (ARE) system and USAS Departure Control System (DCS) to the joint venture, Unilot. Unilot will provide computer equipment and services to LOT and other Polish government agencies and will act as the Unisys sales and service agency throughout Poland.

The DCS was designed to modernize passenger check-in and load planning. The ARE will help airlines monitor departures and optimize bookings and revenue.

Arco Oil & Gas Co. in Plano, Texas, recently purchased two FX/2800 supercomputers from Alliant Computer Systems Corp. for seismic research and oil exploration. The contract involves a reduced instruction set computing-based parallel processor for Arco's corporate computer center and a rack-mounted version of the FX/2800.

Johnson

CONTINUED FROM PAGE 29

written back in the days when the only VAX upgrade around was an 11/780 to an 11/785. Nobody gave it a second look until DEC executives started talking tough about "making money in software." Nobody cared until used VAX 6000s began surfacing and competing against DEC's own sales force.

"DEC may be trying to regain control over what's theirs, but if they do it haphazardly, people could get skittish and not buy DEC," warned Tom Donovan, an analyst at Technology Investment Strategies Corp. in Framingham, Mass.

Analysts who follow the used market were appalled by the policy shift, because charging for a whole new license would easily exceed the cost of an upgrade.

The accepted industry practice is to charge an upgrade fee when a user moves an operating system to a more powerful computer, supposedly for the additional value the operating system brings to the bigger box. No one is objecting to DEC charging *some* sort of upgrade fee. After all, faithful customers who upgraded directly with the company were often paying five to 10 times more than those deal-

ing in used equipment.

But there is a distinctly punitive cast to DEC's claim that a CPU upgrade deserves an entirely new VMS license. These customers did pay in full for one VMS license already, and a second one will run them at least another \$60,000 for VAX 6000-class machines.

What makes the policy even more onerous is it appears to encompass those customers who upgraded in the past. This means a DEC salesman could check out your shop's VAX configuration and inform you it is "invalid" because you upgraded the CPU through a reseller.

What's next, a squad of DEC "Upgrade Police?"

Analysts and resellers who have followed DEC's roller-coaster relations with

the secondary market say consistency has never been the firm's strength. Ironically, the association's effort to clear up those murky areas of DEC policy on used equipment unearthed this poison pill.

"We agree DEC has a right to change its policy, but what about all the work already done?" asked C. D. Smith, president of C. D. Smith and Associates, a DEC reseller in Houston. The dealers' association is asking DEC to rescind the policy or at the very least "grandfather in" all those CPU upgrades out there.

"DEC has made this change without any consideration of its impact on the market," Smith said. "They don't understand us. They won't even talk to us."

DEC pulled a similar stunt a few years ago at a meeting of the DEC Users Soci-

ety (DECUS) in San Francisco. A company official casually announced that VMS licenses would no longer be transferrable on used equipment.

Talk about your galvanizing forces. By the end of the week, the outraged DECUS members had organized a special meeting to protest the change. Thirty days later, DEC backed down.

History is likely to repeat itself in this latest brouhaha as well.

"Once they figure out that this makes them look really bad compared to IBM, they'll see they can't run this risk," said Peter Schay, an analyst at Gartner Group, Inc.

Johnson is a *Computerworld* senior editor, systems and software.

DG users

CONTINUED FROM PAGE 29

raised, which placed at No. 7 in the final tabulation.

"It's hard to feel sanguine about a company that has lost hundreds of millions of dollars over the past few years, but they're still in there, and they're still alive," Farman observed.

DG addressed the issue of software quality and availability by responding that its recently created Eclipse Business Unit will provide an additional focus on that area.

The company cited recently released revisions of CEO, CEO Object Office, DG/SQL and other releases as proof of its commitment to software development and support.

Even though it dropped to No. 2, field service — or lack thereof — is still a major issue for users.

Having trimmed field service back in recent years, DG is now facing more competition from third-party vendors.

DG has never been known for inexpensive maintenance contract offerings, and Farman speculated that the recent economic crisis may be luring users to less expensive third-party agreements.

"They have totally taken away local software engineering support," said Joe Antonio, data center manager at F. Schumacher & Co. in Newark, Del.

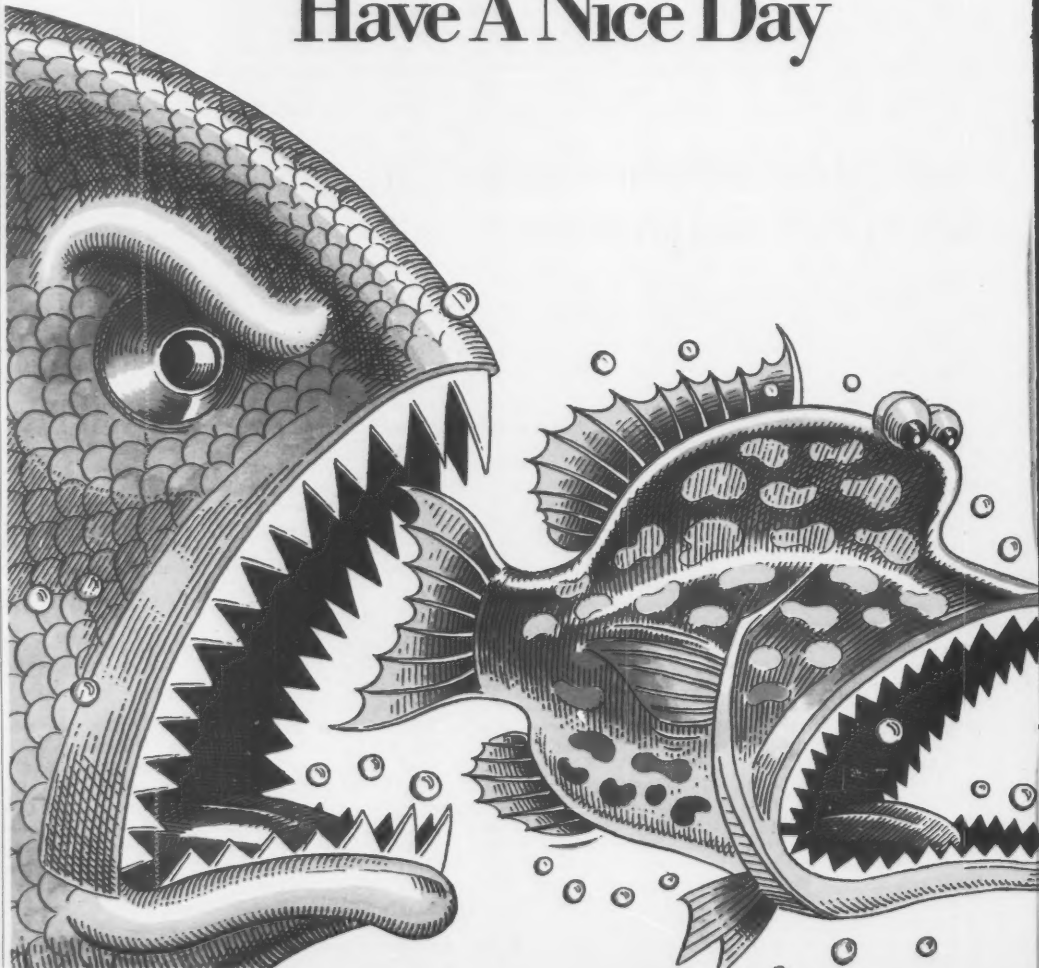
The wallcovering and fabric manufacturer has been a DG customer for almost 12 years, and according to Antonio, it no longer has any personal relationship with the vendor with regard to service and maintenance.

"The layoffs really killed customer service," Antonio said.

Another longtime DG user, Michael Kaiser, who works at Victim Services, a nonprofit agency in New York, said he is using a third party for maintenance and services on the organization's MV/15000 system. Kaiser said the decision to go with a contractor was driven by cost, not performance considerations.

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NEW PRODUCTS — SOFTWARE

Applications packages

Metier Management Systems, Inc. has announced several versions of its Artemis project management software package for various midrange and mainframe platforms.

Artemis 7000, priced at \$20,000, has been released for Unix platforms, and Artemis Project, with a list price of \$9,500, has been targeted at Hewlett-Packard Co. 9000/800 minicomputers.

The company has also announced Ar-

temis 7000 Version 7.5 for Digital Equipment Corp. VAX systems and Artemis 9000 Release 9.4 for IBM mainframes. The products are priced at \$20,000 and \$40,000, respectively.

Metier Management Systems
12701 Fair Lake Circle
Fairfax, Va. 22033
(703) 222-1111

Lawson Associates, Inc. has announced an enhanced version of its purchase order system, a software application designed for IBM System/38 and Application System/400 environments.

Lawson Purchase Order, part of Lawson's Distribution Management System family, includes an overshipment/cost tolerance control feature that notifies users when prespecified parameters for overshipment quantities or invoice costs have been exceeded.

Pricing for the software package begins at \$20,000.

Lawson Associates
1300 Godward St.
Minneapolis, Minn. 55413
(612) 379-0258

Languages

SQL Solutions, Inc. has announced that its SQR procedural fourth-generation lan-

guage and report writer is available for users of Ask Computer Systems, Inc.'s Ingres Products Division's Ingres relational database.

The product features a straightforward command syntax and support for the full complement of SQL commands. A "select paragraph" facility enables programmers to combine queries with procedural commands, according to the vendor.

SQR runs on Digital Equipment Corp. VAX/VMS and Sun Microsystems, Inc. Unix platforms. Pricing ranges from \$1,200 to \$30,000 for VAX/VMS systems and from \$750 to \$12,000 for Sun Unix platforms.

SQL Solutions
8 New England Executive Park
Burlington, Mass. 01803
(617) 270-4150

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The IBM Data Interpretation System (DIS) is graphical, mouse-driven software that actually lets you access, manipulate, analyze, share and store information—right from your own desk.

And, speaking of information, a recent customer survey shows that on a typical workday customers spend a full 50% of their time gathering information—and only 10% using it to their competitive advantage.

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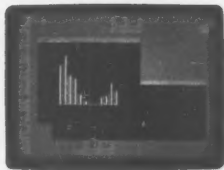
When customers used the right system, the exact opposite was true:

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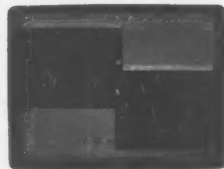
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NEW PRODUCTS — HARDWARE

Data storage

Clearpoint Research Corp. has announced a 64M-byte single-board memory upgrade for Digital Equipment Corp. VAX 8600 or 8650 machines.

The DCME-V86/64MB uses 4M-bit dynamic random-access memory technology to provide a single-slot upgrade alternative to DEC's MS86-DA, a two-slot motherboard equipped with multiple daughter cards, the vendor said.

The product has a list price of \$20,000.

Clearpoint Research
35 Parkwood Drive
Hopkinton, Mass. 01748
(508) 435-2000

American Digital Systems, Inc. has announced a series of tape backup systems that features data compression and compatibility with all Digital Equipment Corp. Q-bus — Unibus — small computer systems interface- and Hierarchical Storage Controller-based systems.

The Mastertape 4 series of backup systems can provide as much as 6G bytes of formatted data storage on a 4mm digital audiotape cassette. Features include a sustained data transfer rate of 366K byte/sec. and a 20-sec. average search capability, according to the vendor.

Pricing for the product begins at \$4,050.

American Digital Systems
490 Boston Post Road
Sudbury, Mass. 01776
(508) 443-7711

Cipher Data Products, Inc. has announced a 1/2-in. cartridge tape drive that features 18 tracks of read/write electronics and an integrated small computer systems interface.

The Cipher Tapexpress was designed to be compatible with IBM's 3480 tape drives. The drive uses standard 200M- and 220M-byte 3480-type cartridges, and when combined with a proprietary automatic cartridge loader, its capacity can be increased to 2.2G bytes without operator intervention, according to the vendor.

Pricing begins at approximately \$13,000.

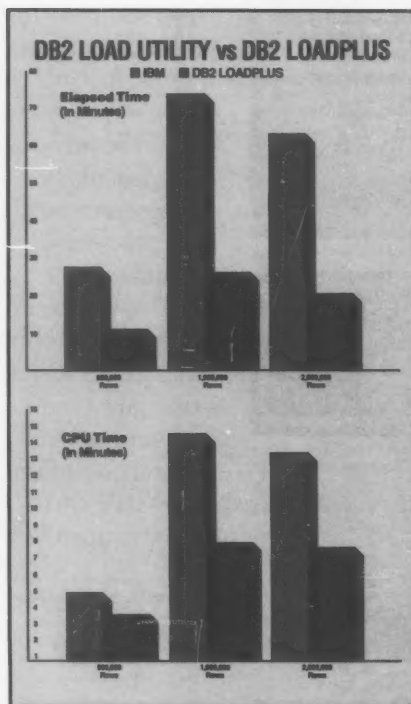
Cipher Data Products
10101 Old Grove Road
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PCs & WORKSTATIONS

COMMENTARY

Patricia Keefe

Playing the name game



What's in a name? According to a member of the Microcomputer Managers Association, OS/2

was originally supposed to be called DOS 5.0, but IBM changed the name to OS/2 to parallel the moniker of the Personal System/2s. This, added to reports that OS/2's design was hamstrung by IBM's hardware requirements, has convinced some that Microsoft's so-called Portable OS/2, or OS/2 3.X, as it is also known, will shed the OS/2 tag before it ever hits the streets. Further evidence may be gleaned from a recent report that references to OS/2 are scratched out of preliminary paperwork on LAN Manager 3.0.

Beat them with technology. As Lotus pushes forward with its third and fourth copyright lawsuits — a summer trial is expected — it's interesting to note who is not in Lotus' corner. Lee Reiswig, IBM assistant general manager of programming for the Entry Systems Division, revealed in a recent interview that he does not support the Lotus copyright frenzy. Reiswig suggested that the best way to deal with clones

Continued on page 45

Trade-ins can sweeten PC deal

Some outlets giving credit for used models as a way of luring customers

BY RICHARD PASTORE
CW STAFF

"If you buy this 1991 Hyundai 486, we'll knock off \$300 for your 1985 Packard Bell."

It may sound like an auto dealer's pitch, but such banter is beginning to be heard on the showroom floors of personal computer dealerships. One major chain is now accepting trade-ins on PCs, and others say they are considering it. However, users and dealers indicate that it will be some time before trade-ins really get rolling and potentially become common.

Proponents of trade-ins say PC saturation, the popularity of Microsoft Corp.'s power-hungry Windows 3.0 and a tightening economy are all contributing fac-



Tom Payne

tors to what will become an increasing customer demand for trade-ins.

ers of Engle Business Equipment in Elizabethtown, Pa. "They would not have updated if it

were't for this program," claimed Engle's Steven Smith. "They would have kept their old equipment."

Analysts see trade-in policies as a lure for picky shoppers. "It's a merchandising ploy," said Seymour Merrin, president of Merrin Information Services in Palo Alto, Calif. "They're trying to entice them with classical retailing techniques."

The most visible dealership to take the plunge into trade-ins is Valcom, Inc. The 300-store chain has about 50 stores participating in the program, which was announced in November. The stores are offering near-market value for old boxes based on Boston Computer Exchange prices. The Exchange is responsible for reselling the trade-ins Valcom takes in.

Valcom expects the program to appeal more to large customers who have a great number of old machines on their hands.

Continued on page 45

Lotus fights to regain market share

BY PATRICIA KEEFE
CW STAFF

CAMBRIDGE, Mass. — Lotus Development Corp. went on the offensive last week, offering buyers of 1-2-3 Release 3.1 a "free" copy of its Ami Pro word processor and promising a \$49 upgrade to its next spreadsheet release — presumably 1-2-3/W — this summer. In addition, Lotus unwrapped a massive advertising campaign.

The impetus for mounting the battle was last week's expected release of Microsoft Corp.'s Excel 3.0 for Windows

3.0. Lotus rivals Borland International, Inc. and Microsoft had their most successful years in 1990, in terms of chipping away at 1-2-3's market share.

There is a \$19.95 shipping and handling charge for Ami Pro, which ordinarily retails for \$495. Users will need to provide a sales receipt for 3.1 and an Ami Pro coupon available through local and national advertising. The offer is valid in the U.S. and Canada for 1-2-3 Release 3.1 purchases and upgrades made between Jan. 8 and April 30, 1991.

Determined to grab a piece of the Microsoft Corp. Windows-

based word processor market, Lotus last month purchased Atlanta-based Samna Corp., the developer of Ami and Ami Pro.

The Ami offer serves a dual purpose: It provides 3.1 buyers with an extra incentive while helping to seed the market for Ami. "We're eager to get [Ami Pro] into the hands of as many Lotus customers as possible," said Woody Benson, director of distribution management for Lotus' Software Business Group.

Although the Ami has received positive reviews — including a rating from *Software Digest* as both the best overall

and Windows-specific word processor — Ami holds but a sliver of market share. Giants in terms of market share, Microsoft Word and Wordperfect Corp.'s name-sake package dominate the market.

The \$49 upgrade option is available to users who purchase 3.1 on or after Jan. 8. Customers must buy a personal computer version of 1-2-3 no later than six months following the original date of their 1-2-3 Release 3.1 purchase.

Users must submit system disks or the reference manual title page, along with the sales receipt. The free copy of Ami Pro comes with a coupon redeemable for the \$49 upgrade.

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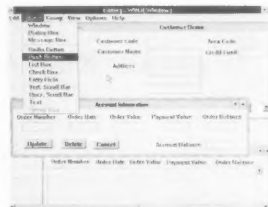
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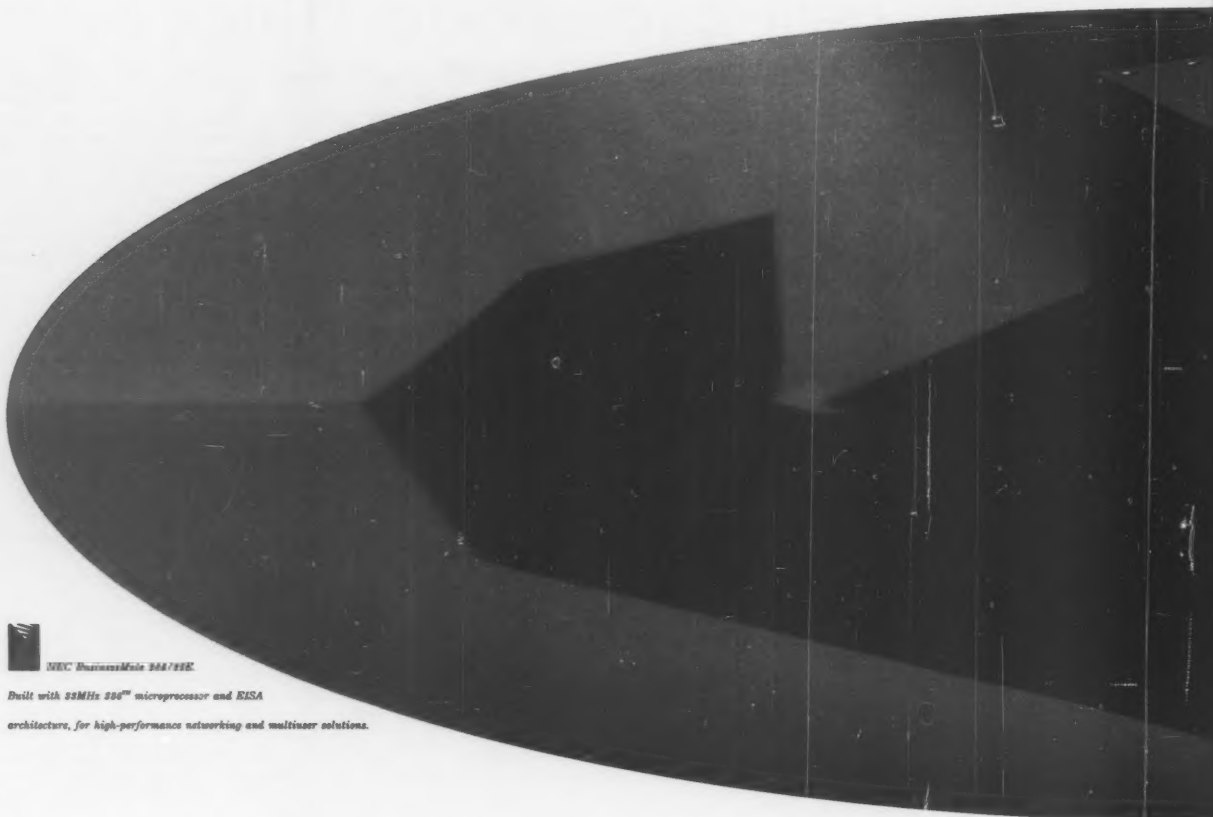
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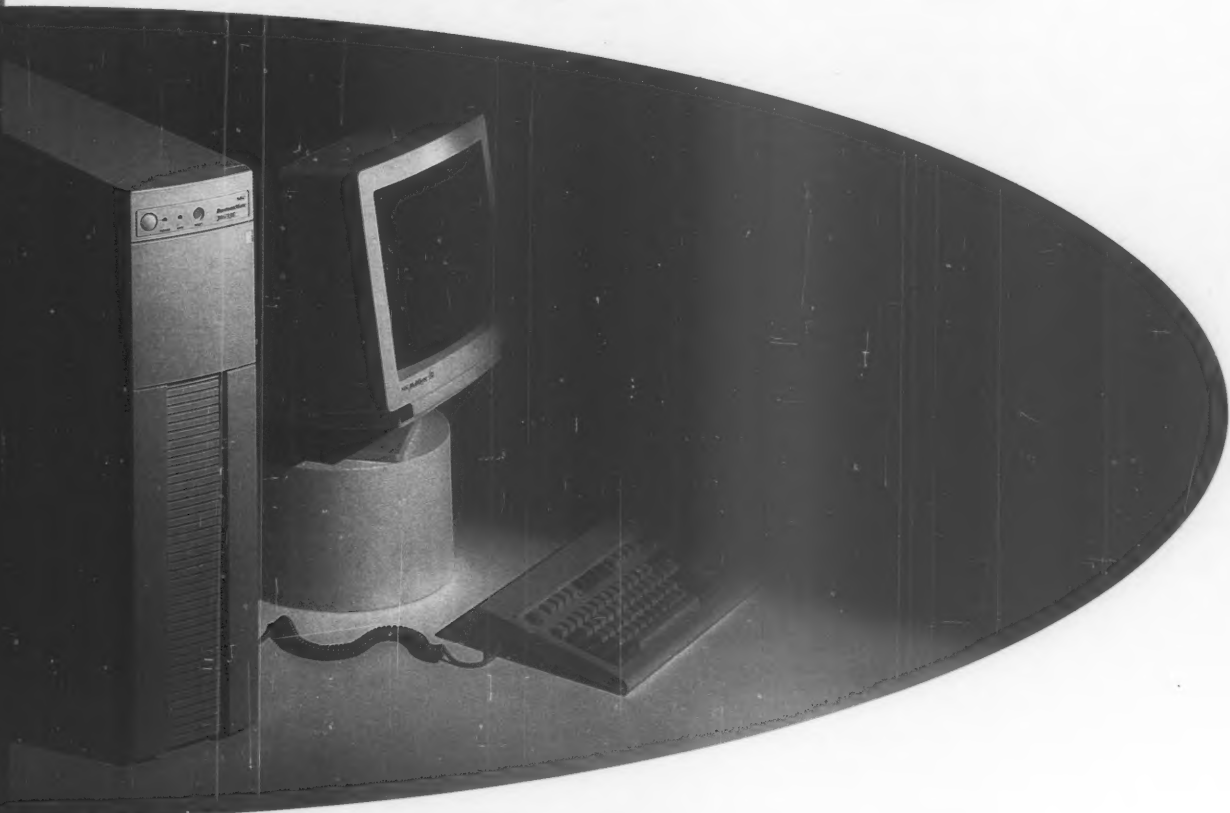
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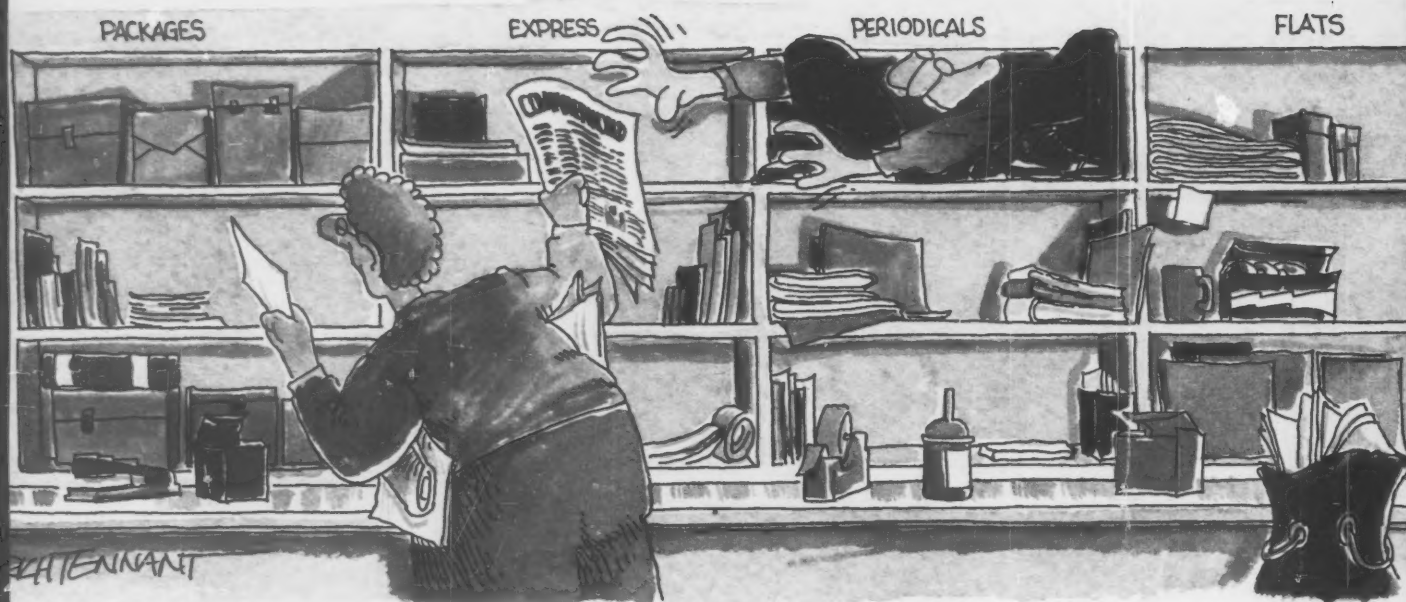


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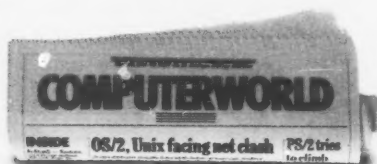
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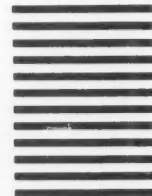
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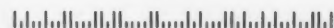
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Users' trust in Mac slip sliding away

BY JAMES DALY
CW STAFF

Most users of Apple Computer, Inc.'s Macintosh remain basically happy with the machine. However, an emerging confluence of technological pressures from the DOS world, displeasure with Apple's product support and network offerings and the specter of tightening budgets are beginning to erode some of that enthusiasm, according to a recent *Computerworld* survey of 320 top information systems professionals.

Users say Apple lost a significant technological edge to IBM-compatible personal computers

with the introduction of Microsoft Corp.'s Windows 3.0, an operating environment that replicates the point-and-click screen appearance that once made the Macintosh unique.

"You can do multitasking with Windows, and you can't with Apple; that's a sore point," said Patrick Lee, director of electronic data processing at Towncraft, Inc. in Glen Rock, N.J.

Respondents also said weak Macintosh networking product offerings and the company's poor support record after Apple products are installed have watered

down their passion for the Cupertino, Calif.-based firm.

Users are troubled that these prominent weaknesses have quelled third-party software developer enthusiasm for the Apple line. "It seems that every

software developer creates for IBM first and then Apple, and this delay is catching up with us," said Diane Coleman, director of MIS at Fleetguard, Inc. in Nashville.

Still, Apple users are generally willing to stick with their machines, warts and all. Nearly 84% said the availability of low-cost Intel

Corp. 80386-based PCs and Windows 3.0 will not affect their Macintosh purchase plans. However, 14% said the introductions had caused them to lose interest in Apple, and they had begun standardizing on MS-DOS.

Apple's long-awaited response to its eroding user base came last fall, when the firm introduced three low-cost Macintoshes designed to counter complaints about the high prices. Even this move, however, may ultimately fall short. More than 85% of those surveyed said the new Macintoshes will not affect their purchase plans.

"The new introductions still do not address the central prob-

lem, which is that all the hot stuff that was once being developed for Apple is now being created for Windows," said Sheldon Laube, national director of information and technology at Price Waterhouse in New York.

Personal preferences aside, economic pressures may ultimately be Apple's greatest enemy. More than 60% of the respondents said they had no plans to buy Macintoshes within the next 12 months. The chief reason: budget freezes.

The survey also found that the majority of users still employ their Macintosh in its traditionally strong areas of desktop publishing and graphics. Sixty-percent and 46%, respectively, of the respondents ranked those as their two most important applications.

On Tech launches scheduler

Organizing groups will be easier for Mac users

BY PATRICIA KEEFE
CW STAFF

CAMBRIDGE, Mass. — On Technology, Inc. has introduced Meeting Maker, a network application said to enable a coordinator on an Apple Computer, Inc. Macintosh to plan, schedule and confirm meetings on-line.

Priced at \$495 per five-user pack and \$895 per 10-user pack, the program is slated to ship in March. Plans exist to port the server piece to DOS and to tie into an electronic-mail system.

The System 7.0-compatible client/server-based product was developed in concert with Natick, Mass.-based Callisto Corp., but On Technology owns the exclusive marketing rights.

Saving time

On Technology President Connall Ryan said large Apple accounts have consistently cited a need for group scheduling software. "They complained they spend too much time scheduling meetings."

Ryan said his only competitor in the Mac market is Wordperfect Corp.'s Office for the Macin-

tosh. "It's a hairy technical problem" to build a scheduler, Ryan said.

Using Meeting Maker, the group coordinator can automatically compare multiple schedules to pinpoint the ideal time for a meeting. An "Auto-Pick" function can select the first available time for all required attendees.

Coordinators can then send meeting invitations to "required and nonessential" attendees, track responses, follow up on schedule changes or cancellations, distribute agendas and reserve rooms.

Workgroup members can make a personal calendar available publicly. Members can block off time slots and indicate which slots can be changed and which appointments are public. Regular meetings can be put into the calendar, and users can print out their calendars.

A 32K-byte text memo capability allows users to compose notes. However, users cannot attach documents to communications, even though "a complete electronic-mail system" forms the underpinnings of Meeting Maker, Ryan said.

Sun holds leader role in workstation market

BY J. A. SAVAGE
CW STAFF

A good reputation and simple momentum kept Sun Microsystems, Inc. leading the workstation market in 1990, according to a report from Dataquest, Inc. Both IBM and Silicon Graphics, Inc. gained slight market share during the year, while Hewlett-Packard Co. and Digital Equipment Corp. lost some ground.

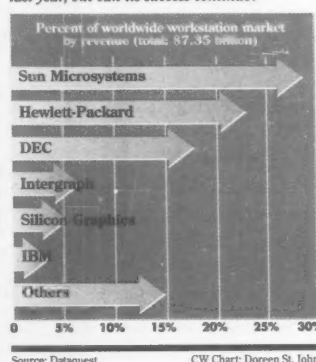
The San Jose, Calif.-based market research firm noted that the 1990 workstation market "was not one of the most robust in history," but it is still healthy and "has much growth ahead of it." The market grew 21.5% over 1989, compared with 40.3% from 1988 to 1989.

Dataquest attributed the slower growth to the general slowdown of the U.S. economy and to price competition.

This year, it will be a bit more difficult for Sun to hold onto its lead, said Laura Segervall, the author of the report. "They will have increased competition from Sparc [Scalable Processor Archi-

Extending its lead

Sun Microsystems strengthened its hold on the top position in the workstation market last year, but can its success continue?



itecture] compatibles," she said. Sun's stubbornness in its insistence on holding onto the Open Look graphical interface in the face of user specification of Motif will cost some accounts, she said.

HP may find this year to be a

turning point in maintaining its share of the market. The firm has been struggling in merging its own workstation products with those of its Apollo division. HP is redeemed somewhat by its ability to sell into commercial and technical markets, Segervall said.

DEC's slow showing last year was blamed on the lack of available software. Dataquest predicts this will not be an issue in 1991. Instead, Dataquest forecasts that DEC's trouble will be selling its workstations against its own minicomputers.

Dataquest reported that IBM did surprisingly well in its first year of selling workstations, despite limited software. IBM is expected to do better this year, but it too is selling against its own proprietary product line.

Silicon Graphics and Intergraph Corp. remained nearly static in market share. The report noted that Silicon Graphics is likely to remain "a premier three-dimensional graphics company," but is unlikely to take much more of the market this year.

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PC Week
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IBM lets the Now 486 technology

Without the proper venue, dazzling ability often falls short of expectations. That's certainly been the case with the Intel 486™ microprocessor, a processor that hasn't been utilized to its full potential. So that's what IBM set out to do. Just as it takes a seasoned jockey to turn a thoroughbred into a champion, it took IBM to give the 486 processor every opportunity to work its genius. Introducing IBM Personal System/2® Model 90 XP 486 and Model 95 XP 486.

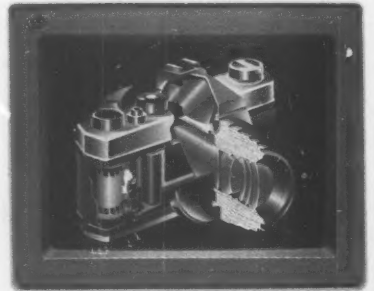
From speed and storage capacity to graphics capabilities and upgradability, the new PS/2® Models 90 and 95 are designed to optimize the power of the Intel 486 processor and deliver a truly balanced performance—equipping you with solutions for today, and providing a platform of growth for tomorrow.

THE 90'S ARE A POWERFUL BREED.

Right out of the starting gate, the Models 90 and 95 will astound you with their power and sophistication. Featuring a 33 MHz processor and a 25 MHz processor that's easily upgraded to 33 MHz, they deliver blazing speed and balanced performance, expanding your capacity for computer-intensive applications like CAD/CAM, financial modeling and multimedia. The course between your data and your processing has also been strengthened—the Micro Channel™ 32-bit data path, combined with a lightning-quick data-transfer rate, not only optimizes the present power of the 486 processor by feeding it a steady stream of information, but also provides for processor

enhancements and will allow you to benefit from advanced operating systems to come. Plus these other innovations: a wider 64-bit data path which optimizes the 486 processor's access to system memory; 4MB memory standard

(expandable to 32MB); and a 256KB cache option for even greater speed. All in all, it's easy to see how the concept of computer “power” has been enhanced, and how IBM helps you take full advantage of every second of computing time.



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PS/2 Models 90 and 95 have enormous storage potential—up to 96 gigabytes on the Model 90 and up to 1.6GB on the Model 95. And with the PS/2 External Storage Enclosures, the Models 90 and 95 can provide 8.96GB and more. We've also augmented the computing power by adding more flexibility to resident memory—our new 1.3 version of OS/2® requires as little as 2MB on your system. With this streamlined



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Features	IBM PS/2 Model 90	IBM PS/2 Model 95
Microprocessor		
Standard	80486	80486
Clock speed	25-33 MHz	25-33 MHz
Optional upgrade	33 MHz	33 MHz
Memory		
Standard	4MB (70ns)	4MB (70ns)
Maximum	32MB	32MB
Integrated Functions	Extended Graphics Array (XGA) and display port, DMA serial port (dual ports on Model 90), DMA parallel port, pointing device port, keyboard port, diskette controller support for three drives, SCSI Adapter with Cache.	
Fixed Disk Storage		
Standard	80-320MB	160MB-320MB
Display Modes	XGA (includes all VGA modes) 640 x 480 x 256 colors/ 64 gray shades; 1024 x 768 x 16 colors/gray shades; hardware support for 132 column text mode; 16-bit direct color mode at 640 x 480 x 64K colors	
Available Expansion Slots	three 32-bit	six 32-bit
Bus Architecture		
Data path	MCA 32-bit	MCA 32-bit

of your system. With Micro Channel busmaster adapters, you can incorporate multiple processors—like adding “computers” to your computer. And coupled with the industry-standard Small Computer System Interface (SCSI), you'll be able to support new applications and continue to build on your system as your needs become more varied and complex.

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IBM



HP's Vectra 486: Reliable but costly

Technology Analysis—a roundup of expert opinion about new products. Summaries written by Computerworld staff member Derek Slater.

Looking for a solid Intel Corp. i486-based system at a high price? Consider Hewlett-Packard Co.'s 25-MHz Vectra 486, reviewers at personal computer publications say.

The Vectra earns high marks in benchmarking tests by these publications for its durable construction, good compatibility and performance and exceptional reliability. However, reviewers also point out that the price is relatively high at \$13,099 for the basic configuration with a 330M-byte hard disk drive. The system, a tower case with 2M bytes of standard random-access memory and six expansion slots, is based on the Extended Industry Standard Architecture bus.

Performance: The Vectra rates at or above average on stand-alone performance and benchmark tests; reviewers note its quick hard-disk speed.

Compatibility: Test centers found no significant hardware or software compatibility problems.

Documentation: Hewlett-Packard's documentation is complete and thoughtfully organized.

Support: Technical support for the Vectra is excellent, although reviewers find fault with HP's dealer-only support policy.

Value: The product rates in the middle of the i486-based pack in overall value. The Vectra is a high-quality machine, but the price is steep.

Server capabilities: The Vectra earns high marks in server functions, particularly transaction processing. It is able to handle larger networks than XT/AT bus machines can efficiently manage.

Reviews Summary

Criteria	Infoworld 7/30/90	LAN Times 8/30	PC Week 6/4/90
Performance	Very good	Excellent	7
Compatibility	Excellent	Good	NC
Design	Very good	Good	9
Documentation	Very good	Simple but complete	7
Support	Excellent	NC	NC
Value	Satisfactory	NC	5
Reviewer's score	8.2	7.8	6.9

Numeric ratings are based on a weighted scale of 1 to 10 where 10 is best. NC: No comment. These are excerpts from reviews. Refer to actual articles for details.

Vectra 486



Points (maximum)	Category
23 (30)	Published reviews
18 (20)	Analysts' ratings
14 (15)	Users' ratings
14 (20)	Cost evaluation
11 (15)	Vendor financials

(Maximum score: 100)

Hewlett-Packard responds

Comments from Jeff Briggs, North American marketing manager for PCs:

Support: If a customer is already under a service contract with HP, the PCs fall under the same agreement. If the Vectra is purchased through a dealer, that dealer can provide support himself with HP's help, or he can refer the customer to HP. **Value:** The Vectra is worth the extra money up front because of its reliability.

RATINGS

- Users: Dean Errington, Jones & Cotton, Inc. (performance: 10, cost: 10); Mike Gibbons, Wilsey & Hamm Pacific (8,6); Lavar Edwards, Graphics, Inc. (10,4).
- Analyst: Jerry Caron, Faulkner Microcomputer Reports (9,7).
- Financials: Jerry Fleming, Fahnestock & Co. (overall rating: 7); Jay Ritter, Duff & Phelps (6); Peter Musser, Ragen MacKenzie (8).

"In the past, Hewlett was a real money machine. Now it's very stable, very solid but underperforming from past expectations. Profitability has dropped," Fleming said.

Northgate's Elegance: A lot of power for a low price

Elegance 486



Points (maximum)	Category
27 (30)	Published reviews
12 (20)	Analysts' ratings
14 (15)	Users' ratings
18 (20)	Cost evaluation
2 (15)	Vendor financials

(Maximum score: 100)

Reviews Summary

Criteria	Infoworld 7/30/90	PC Magazine 9/11/90	PC Week 5/7/90
Performance	Very good	Excellent	8
Compatibility	Excellent	Good	8
Design	Good	A winning combination	NC
Documentation	Excellent	NC	NC
Support	Excellent	NC	NC
Value	Excellent	Highly recommended	9
Reviewer's score	9.1	Editor's Choice	8.6

Numeric ratings are based on a weighted scale of 1 to 10 where 10 is best. NC: No comment. These are excerpts from reviews. Refer to actual articles for details.

RATINGS

- Users: Jerry Long, Science Applications, Inc. (performance: 9; cost: 10); John Wallman, Grant Thornton (9,10); David Hoffman, New York PC Users' Group (10,8).
 - Analyst: Jerry Caron, Faulkner Microcomputer Reports (6,7). "It's priced tremendously, but it is a bare-bones system without the high-end I/O capability," Caron said.
 - Financials: Eric Zimits, Rauscher Pierce Refsnes (overall rating: 1); Joe McGlone, McGlone and Co. (1).
- As of Sept. 1990, Northgate's sales for a nine-month period were \$150 million, with a net income of \$1.2 million. "They've squandered all their cash," Zimits said.

Northgate responds

Comments from Art Lazere, chairman of Northgate:

Performance: There's no BIOS shadowing on the XT/AT bus machine because it is an unnecessary waste of resident random-access memory.

Server capabilities: We've been shipping the EISA version for a couple of weeks now.

Financials: We had a rocky third quarter. We expect a return to profitability in the near future.

Northgate Computer Systems, Inc.'s Elegance 486/251 personal computer offers excellent power and speed in a system that takes full advantage of Intel Corp.'s i486 chip, according to reviews by leading PC publications.

Northgate's XT/AT bus-based machine is available by mail order only for \$5,599, including a 200M-byte hard drive, two floppy drives, an IBM Video Graphics Array-compatible monitor and a mouse.

Performance: Northgate's system easily out-scores better-known competitors in many benchmark tests. Though the Elegance lacks BIOS shadowing — the ability to copy information from read-only memory to random-access memory — its performance is described by *Infoworld* as "impressive."

Compatibility: Reviewers laud the system's hardware and software compatibility with standard products, noting no significant glitches.

Documentation: The documentation is very thorough, including photos, glossaries and indexes.

Support: Reviewers rate Northgate's support as excellent. The Elegance is backed by a 30-day return policy, on-site service and 24-hour toll-free telephone support.

Value: The system is an excellent value, offering superior system performance for a low price.

Server capabilities: Mass-storage capacity and fast network file-transfer speeds make the Elegance a good choice for small or medium-size networks. However, the XT/AT bus architecture results in large performance drop-offs in larger networks, according to the reviewers.

Methodology: Published reviews: average of numeric scores from product reviews published by PC publications listed in reviews summary chart multiplied by three. All ratings are based on a 1-to-10 scale, where 10 is excellent. Analysts: average overall product ratings multiplied by 2. Users: aver-

age overall product ratings multiplied by 1.5. Cost: average cost to get product up and running ratings from both groups multiplied by 2. Financials: average of analysts' ratings of vendor financials and product sales from financial analysts multiplied by 1.5.

Keefe

CONTINUED FROM PAGE 37

is to do a better job.

Of course, this doesn't account for IBM's attempt a few years back to shut out the rest of the industry with a proprietary line of hardware. The Micro Channel Architecture debuted after IBM began losing market share to clones taking advantage of the open AT bus architecture. But hey, that's hardware. IBM has since wised up, and Lee's thing is software.

Hang 'em high. Iffy news for impatient users waiting for IBM and Microsoft to converge their respective OS/2 LAN Server and LAN Manager servers. What's at issue is the differences between the directories and the two screen interfaces at the administrator level. A consultant close to Microsoft claimed IBM offered the company an olive branch last month regarding one of the more "outstanding technical issues" related to converging the servers. When it was rejected by Microsoft for some reason, IBM reportedly went "bonkers."

From the frying pan into the fire.

Trade-ins

CONTINUED FROM PAGE 37

However, because the trade-in concept is novel for PCs, "it's still a small part of our business and probably will remain so for quite a while," said Michael Steffan, vice president of corporate development.

Indeed, user attitudes bear out this stance. While some expressed interest in the program, they said they were not ready to participate. "Right now, we typically have a lot of areas where we can redeploy those machines. At a future date, [a trade-in program] might be attractive," said William Etheridge, director of computing and communications at Haskell Co. in Jacksonville, Fla.

Other users said the trade-in value is not worth their while. Pharmaceutical firm Rhone-Poulenc, Inc. grudgingly accepted \$20 for hardware that originally cost \$1,200, microcomputing director Marc Kustoff said.

"For the amount of money these dealers are willing to pay, we're better off offering the PCs for sale to employees for home use," said Jerry Weinstein, director of corporate MIS at General Instrument Corp.

So far, dealers who have instituted trade-in programs have closed only a few deals. "Most people don't think about trading in PCs the way they think about trading in cars," said John Howman, president of Valcom Business Center in Milwaukee. "It will take another year or so for general acceptance."

Needless to say, reports like the previous one don't do much to enhance the relationship between the two micro giants. Hence a bind for IBM. MVS users are reportedly pressuring IBM to offer Named Pipes support under MVS.

Why? It's easier to deal with than IBM's Advanced Program-to-Program Communications. One customer has reportedly suggested cutting back on its mainframe commitment if IBM does not come through. However, adding Named Pipes support to MVS would undoubtedly benefit Microsoft, hence the bind.

Can you C this? IBM Vice President Jim Cannavino is reportedly funding IBM's Toronto lab's efforts to port the C compiler for the AS/400 to the PS/2. A source adds that Cannavino is telling folks inside IBM that he will "decommit" to Microsoft's C compiler, replacing it with an IBM alternative.

So much hot air? After spending the last several years anointing each "the year of Apple connectivity" and announcing, but not shipping, a bushel of networking products, Apple has found that most of its corporate users are not taking advantage of the networking capabilities built into their Macintoshes.

A developer who works with Apple says a company survey found most users were operating in stand-alone mode or linking up to a laser printer. This isn't sitting well in Cupertino, Calif., so Apple has launched a campaign to encourage its corporate accounts to take better advantage of its connectivity, the developer says. Maybe Apple should deliver all of its promised connectivity first and push users later.

Report from the trenches. Upword, Wang's Windows word processor or document processor, is much faster than Samna's Ami Pro for Windows, according to a hacker who has both. "It converted ASCII files almost as quickly as it would load its proprietary versions, spell checking was quick and convenient and it repaginated a 30-page document in about 30 seconds," he said approvingly. However, Upword sucks up 9M bytes of disk space in its full form. And the beta copy we had didn't have a lot of the on-line Help and tutorial features installed. "Granted, I'm not going to tie up 9M bytes of my disk for the thing, but it isn't bad," our source concluded.

Keefe is Computerworld's senior editor, PCs and workstations.

It's no big deal

If PC trade-ins catch on with dealers and users, it will not be because IBM helped pave the way. A short-lived IBM foray into trade-ins a couple of years ago proved unworkable for dealers, users and IBM.

"The prices they were offering were so low, and the process was so difficult that it really inhibited any kind of trade-in," said John Howman, president of Valcom Business Center in Milwaukee.

When planning the program, IBM weighed the costs of handling and disposing of the old hardware and determined it could only offer customers 25% of the secondary market street price, according to Alex Randall, president of the Boston Computer Exchange and author of *Alex Randall's Used Computer Handbook*. "That's just not enough," Randall said.

Logistically, the program was tough for IBM's dealers to administrate. "The dealers had a nightmare with all of the paperwork that went along with it," said Joe Ann Stahel, president of Storeboard/Computer Intelligence in Dallas.

IBM officials were unavailable for comment on the aborted trade-in program. Valcom, Inc. hopes to avoid the mistakes of the past by linking up with the Exchange, which will take the trade-ins off the dealers' hands and resell them on the secondary market. "We can turn around the machines in a few days," said Carl Davies, manager of Valcom's Techtrade program in the Robinsville, N.J., store. "The paperwork for us is pretty simple," because it is incorporated into the operation's normal paperwork routine, he said.

RICHARD PASTORE

Once the program catches on, however, 30% to 40% of customers will participate, estimated Ron Harris, president of an Oklahoma City Valcom dealership.

Despite this slow start, other dealers are reportedly considering similar trade-

in programs. "We've resisted it in the past, but we're getting more pressure to handle trade-ins," said Sam Adicoff, president of PC Edge, a San Jose, Calif.-based dealer. "If a company's not growing but has a need for newer technology, there's more pressure to somehow dispose of those old machines."

NEW PRODUCTS

Systems

Everex Systems, Inc. has announced an Extended Industry Standard Architecture 12-slot, 33-MHz Intel Corp. 80386-based computer system that includes a thermal management system for cooling components.

Stepcube was designed to operate as

either a file server or multiuser system. The computer system includes a 400-watt power supply.

Pricing for Stepcube ranges from \$9,000 to \$14,000, depending on configuration.

Everex Systems
48431 Milmont Drive
Fremont, Calif. 94538
(415) 498-1115

Cardinal Technologies, Inc. has announced a desktop system that includes a 12-in. IBM Video Graphics Array-compatible monitor and 1M byte of random-access memory.

The PC10-386SX, the latest member of Cardinal's PC10 series of desktop computers, features a 20-MHz maximum clock speed and is priced at \$1,399.

Cardinal Technologies
1827 Freedom Road
Lancaster, Pa. 17601
(717) 293-3000

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Access is a component of **The Network Center** family of VTAM extensions from North Ridge Software. To get the full story (the one that no one ever told you) contact the VTAM experts at North Ridge Software for complete information and a free **Access** demonstration diskette. Call (206) 882-2600 or FAX (206) 881-6904.

The Network Center

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"Only BANYAN could have done it."



From an interview with Albert Herrington,
St. Jude Children's Research Hospital.

"We don't want a big network administration staff. We're a research hospital dedicated to catastrophic childhood diseases, and that's where the money goes."

What problems did you face?

"The worst problem was the conglomeration of hardware to be tied together. Everything from PC ATs to DEC VAXs and an IBM AS/400. That, and continuous moves as we remodel and expand the facilities."

Whose network operating software did you evaluate?

"Everyone's, it seems. IBM's, AT&T's, Novell's, Banyan's and 3Com's."

How does St. Jude feel about choosing Banyan's VINES® now?

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COMMENTARY

Elisabeth Horwitt

New tools, new troubles



Any tool can be abused: The more powerful the tool, the stronger the potential for it to get out of hand.

This tried-and-true formula is particularly applicable to computer-integrated manufacturing (CIM), the powerful set of tools that addresses the needs of such a broad range of users. The potential for abuse comes when the needs of two sets of users — such as management and operations — conflict.

When IBM unveiled its CIM Advantage program in the fall of 1989, user empowerment was one of its central themes. "This is IBM's third wave, or 'peace corps' approach to CIM, trying to understand users' needs," says Ted Rybeck at Advanced Manufacturing Research. The first wave was IBM's traditional Goliath approach of "running all manufacturing systems off a monster mainframe," while the second, or "Trojan horse" approach, involved entering the shop floor by way of PCs and ex-

Continued on page 51

Terminal servers cut LAN costs

ANALYSIS

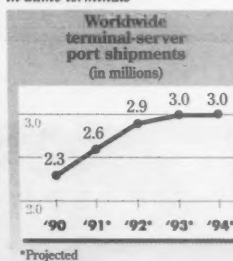
BY JOANIE M. WEXLER
CW STAFF

Local-area networks are in vogue, and many companies with large investments in dumb terminals are scurrying to bring those desktop devices into the LAN environment. Terminal-intensive applications, such as inventory control, database access and order entry, justify maintaining the low-cost machines in many firms.

As a result, a not-so-hyped device called a terminal server — known in IBM parlance as a LAN-adaptable cluster control-

Flatlands

Growth in the terminal-server market will flatten as desktop systems outlast investments in dumb terminals



Source: International Data Corp.

ler — is quietly raking in more than \$435 million per year with one half million devices and nearly six million ports installed.

Terminal servers connect terminals and other devices to a LAN and allow desktop users to link to more than one computer simultaneously. A main benefit of the devices, according to Dave Passmore, a partner at Ernst & Young's networking consulting practice in Fairfax, Va., is eliminating the cabling headaches involved in hard-wiring individual terminals or personal computers to a host.

An alternative piece of equipment, a data private-branch exchange, does not address the ca-

bling issue and allows access to just one host at a time, he said.

The market for terminal servers is mature, particularly since Digital Equipment Corp. — the pioneer and leader in the terminal server market with about 50% overall market share, according to analysts — recently began licensing its proprietary Local Area Transport (LAT) protocol. DEC said terminal servers currently represent 50% of its networking business.

LAT, which can be bridged but not routed, has historically resided only in DEC terminal servers to let DEC VT series terminals communicate across an Ethernet LAN.

The DEC licensing move has allowed niche vendors to emerge and compete with new functionality and lower per-port costs than DEC.

Looking for some elbow room

Terminal-server vendors are tripping over each other in a crowded market that is inevitably headed for shakeout.

Makers of stand-alone boxes are also feeling a squeeze from those in the sizzling smart hub market, as vendors such as Cabletron Systems, Inc. and Racal-Interlan are adding terminal-server support along with bridging, routing and network management to their intelligent wiring concentrators.

"While no one is going to install an intelligent wiring system specifically for the terminal-server capability, they'll go that way if they already have a smart hub and need terminal-server connectivity," said Brad Baldwin, an analyst at

Gartner Group, Inc.

The reasons, he said, are that users gain "all functionality and network management with one system. Also, in terms of cost, you're now amortizing a more feature-rich box, so you realize a lower price per port."

Terminal-server market leader DEC has recognized its smart hub competitors and plans to act accordingly, said Lee Cooper, marketing manager for DEC's LAN Access Marketing Group.

"There's no question that we're going to be looking at smart hubs in addition to the terminal-server market," Cooper said.

JOANIE M. WEXLER

Doubling up

Another legacy of the licensing free-up has been single-product support of both LAT and Transmission Control Protocol/Internet Protocol (TCP/IP). Now that vendors such as Datability Software Systems, Inc., Emulex Corp., Xylogics, Inc. and Xyplex, Inc. are bundling both protocols into their products, desktops in companies running a mixture of DEC and Unix equipment can communicate with dissimilar hosts through one device.

Major terminal-server players Ungermann-Bass, Inc. and 3Com Corp., which hold 13% of the market, are also doubling up.

Continued on page 50

Marist creating a high-tech campus

BY CAROL HILDEBRAND
CW STAFF

POUGHKEEPSIE, N.Y. — By the time Marist College is through, about the only things you will not be able to do there electronically will be either illegal, immoral or fattening.

As part of a \$13 million partnership the tiny liberal arts school has formed with IBM, every room on campus will eventually be wired to take advantage of state-of-the-art voice and data systems.

Marist, which has a student population of about 3,200, has had a good relationship with IBM for years, according to Dennis Murray, president of the college. Marist is in the heart of IBM country, and about 10% of its graduates find jobs there when they graduate, he said.

The program originally emerged from a study aimed at gauging the impact of large mainframe capabilities on a small environment, for which Marist



Marist College and IBM are working together to install state-of-the-art voice and data networks

received an IBM 3090 Model 200E.

After starting to network the campus together to take advantage of all this horsepower, "we started to realize that what we were doing for data also made sense for voice," Murray said. So the study was expanded to in-

clude voice capabilities as well.

IBM is providing Marist with a Rolm Systems 9751 CBX switch, as well as Rolm phone mail and IBM Token-Ring local-area networks. The college is paying for cabling and a fiber-optic backbone to connect campus buildings to each other as well as

to the mainframe.

When the study is complete, Murray said, he expects every room on campus to be wired for voice and data transmission. "If a student has a personal computer, they can just walk into their room and plug into the network," he said, adding that they hope to get the wiring done by the fall.

Each student will also have a voice mailbox. "You can get to any phone on campus and punch in your code and get voice messages," Murray said. He added that he hopes it will smooth out a lot of organizational hassles. For instance, a faculty member can advise seminar attendees of a switch in location by leaving a phone-mail message.

Making connections

According to Carl Gerberich, vice president of information services at the college, each floor of a residence hall, for example, will have its own Token-Ring connected to a buildingwide ring, which in turn will hook into the campuswide fiber backbone.

Although Marist will not pro-

vide each student with a PC, each dormitory will boast several common terminal rooms, with even greater access available at the academic buildings. For example, the new Dyson Center for Management Studies, which was constructed to take advantage of the data and telephone network, has two laboratories with a total of approximately 45 IBM Personal System/2 55SXs.

Murray sees almost limitless opportunities for the new system. The card catalog at the library is already on-line. "It can tell you if a book is checked out and when it is due back, so you don't have to look through the stacks for books," he said. "Next year, you'll be able to reserve the book right over the lines." Murray said he wants the final phase of the study to examine methods to exploit optical storage technologies in the library.

Murray said general reaction has been positive: "Initially, there's a bit of grousing, but once they start to see how information technology can be useful to them, the students become very excited about it."

Terminal

CONTINUED FROM PAGE 49

and 10% of the respective markets, according to Stamford, Conn.-based Gartner Group, Inc., are also slated to ship dual-protocol products in first-quarter 1991. DEC announced a dual-protocol product last month, but the firm said it has not officially started shipping.

Another function differentiating products is the level of security they offer. Milo Medin, a network architect at the National Aeronautics and Space Administration's Ames Research Center in Moffett Field, Calif., said he installed about two dozen 32-port Xylogics Annex terminal servers because of their multi-level and flexible security features and the product's Unix command interface.

"The product allows you to alter the set of privileges users have, and all network activity is automatically logged," said Medin, who is consulting at the NASA arm for Sterling Software. "We can't have people dialing in from off-site and roaming around our network if they're not authorized."

Cautious consumers

Many firms eyeing their pocketbooks have decided to delay replacing their terminals with intelligent desktop systems for a few years.

Pennsylvania Blue Shield, for example, is now turning to a hybrid mainframe/token-ring LAN strategy [CW, Jan. 7]. The company is willing to shell out \$2.5 million for new LAN-attachable cluster controllers to protect its investment in approximately 4,500 IBM 3270 terminals.

While the market for dumb terminals is flattening, a steady 2.5 million will continue to ship

through 1994 as terminal server candidates, according to International Data Corp. research numbers.

In addition, DEC estimates that half of its installed 3 million terminal server ports are used for linking PCs — not terminals — into a network. The low-cost network connection makes the terminal server solution viable for PC installations in which PCs

are going to run frequently in terminal emulation mode.

Brad Baldwin, a networking analyst at Gartner Group, tags DEC equipment at \$450 per port and 3Com at about \$300. Niche competitor Xylogics pegs its current per-port cost at about \$200 and expects it to drop to about \$100 in first-quarter 1991.

For PCs in a Unix network, terminal servers with TCP/IP

also support Telnet, an application utility for terminal emulation.

Passmore remarked, however, that users "give their PCs a lobotomy" by linking the intelligent devices to a LAN via a terminal server in that the PCs "get the connectivity of a LAN but not the functionality."

Vendors, however, pointed out that communications soft-

ware bundled into a terminal server will allow file transfers — a function not available with dumb terminals.

In addition, Serial Line IP, a protocol resident in some terminal servers, provides access to additional LAN features such as virtual disk drives, and PCs running a windowing program can run terminal emulation alongside local applications.



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WORLD BRIEFS

Sprint lowers foreign rates

U.S. Sprint Communications Co. announced "significant" rate reductions for international calls to 36 foreign destinations. The plan, which targets small-business and residential customers, provides connections to more than 170 countries and territories, Sprint said.

Elektrim, the state-owned telecommunications company of Poland, has awarded **Siemens Corp.** a \$33 million contract to install a digital telephone network in Kattowitz, Poland, by the end of this year. The installation will reportedly include four switching offices supporting approximately 56,000 subscriber lines, as well as an international long-lines office.

Horwitt

CONTINUED FROM PAGE 49

panding from there, Rybeck says.

IBM sought to please end users by introducing a set of enablers, such as Plantworks, which uses screens, graphics and windows to help nontechnical users to write their own

applications to track and control processes and create reports.

A related tool was Process Operations Management System (POMS), a third-party product aimed at the process industries.

At least one user who was interviewed recently was enthusiastic about the product's friendliness, which enables oper-

ations people with little or no programming expertise to generate reports and applications. Users may feel more ambivalent, however, about the fact that POMS can be used by supervisors to keep a tighter and tighter rein on their activities.

One of the original purposes of POMS was to automatically track and collect detailed information about plant processes

and to help ensure food and drug companies' compliance with the Food and Drug Administration and the production requirements of other regulatory bodies.

The system can be used not only to collect such information, but also to monitor various areas of the plant and pinpoint where a machine or an operator is pulling the wrong switch or en-

tering the wrong instruction. It can even be used to let a user know that he or she has done something wrong and to provide instructions on how to correct the problem.

The value of such capabilities for quality control is obvious. Less obvious, perhaps, is the potential for the power of POMS to go to managers' heads.

"POMS can be used to migrate control up the automation pyramid," says Walter Carey, director of manufacturing systems development. While "the idea of the chairman of the board tracking and controlling boilers in the factory is sublimely ridiculous," business managers could easily start using POMS to make their needs known directly to plant managers and operators — causing resentment and confusion.

Even the justified use of POMS for quality control can be taken too far, as supervisors use the system to keep a tight eye on operators — who thus become increasingly paranoid.

USERS MAY FEEL MORE ambivalent, however, about the fact that POMS can be used by supervisors to keep a tighter and tighter rein on their activities.

According to Industrial Computing Design Corp. President Curt Grina, a new capability slated for introduction this year will allow managers to send interactive video presentations, via POMS, to operators who need help with whatever they are doing.

"So at the appropriate time, instead of showing a document to a person on how to break a pump down," Grina says, "you get a movie with the supervisor telling you about which bolts to loosen. This naturally fits into the POMS procedure model, which is tracking what you're doing, any mistakes you are making and what you are supposed to do next."

All very well, particularly for inexperienced operators who need their hands held. However, if the monitoring and instruction are applied too enthusiastically, then valuable, experienced operators will stop valuing their workstations as empowerment tools and start resenting them as a combination of nursemaid, disciplinarian and corporate spy.

And those valuable people may decide to look for work at a less leading-edge organization.

Horwitt is a *Computerworld* senior editor, networking.

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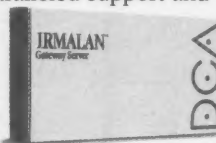
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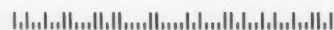
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MANAGER'S JOURNAL

EXECUTIVE TRACK



John E. Chay has been named president of **American Creative Enterprises, Inc.**, a New York-based consulting firm. Chay was previously vice president of information systems at the National Retail Federation (NRF), the largest retail trade association in the U.S. Before joining NRF 11 years ago, Chay held IS executive positions at several leading U.S. retailers.

Two IS managers were recently promoted at **McCormick & Co.**, a seasonings and specialty foods firm in Hunt Valley, Md.

Joseph H. Callaway was promoted to telecommunications manager. He had been MIS network manager since 1988. He joined the company in 1984 as operations support supervisor and was later promoted to telecommunications supervisor.

Callaway previously held technical positions at General Instrument Corp., Crown Central Petroleum Corp., W.R. Grace & Co., Maryland National Bank and Suburban Trust Co.

Michael M. Prime was named lead systems analyst in the MIS department at the McCormick Flavor Group. He had been manager of materials and logistics for the department since 1988.

Prime joined McCormick in 1986 as data processing manager for the Golden West Foods subsidiary in Bedford, Va. He previously worked at Roadway Package Systems, Inc. and Anchor Hockings Foodservice.

Who's on the go?

Changing jobs? Promoting an assistant? Your peers want to know who is coming and going, and *Computerworld* wants to help by mentioning any IS job changes in Executive Track. When you have news about staff changes, be sure to drop a note and photo or have your public relations department write to Clinton Wilder, Senior Editor, *Management, Computerworld*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701-9171.

No dumping on this IS staff

Waste Management uses hybrid IS structure to run garbage business

BY ELLIS BOOKER
CW STAFF

Garbage. Trash. Waste. Taking care of the world's debris and hauling it away from millions of households in hundreds of cities and towns every day has made Waste Management of North America, Inc. the No. 1 garbage mover and landfill operator in the U.S., with revenue of \$4.48 billion last year.

It is no surprise that this lowest-tech of all businesses requires a good-size information systems department.

"Understand, for all the garbage that's thrown on the trucks, there's a customer," explains Edward C. Bacom, staff vice president of IS, who heads a centralized IS staff of 400 at the company's Oak Brook, Ill., headquarters.

Yet hauling and dumping trash would appear to be one of the world's most decentralized business activities. How does Waste Management keep IS responsive? By being the new type of "centrally decentralized" IS organization described last year in a *Harvard Business Review* article by Ernest von Simson of The Research Board.

Waste Management's centralized IS operation in Oak Brook includes two broad functions: development and central services.

Development comprises microcomputer, midrange and IBM mainframe applications development for the divisions. Central support encompasses administration of the data center, a

help desk and voice and data telecommunications.

In addition, the central group of the North American unit acts as a volume purchasing and agreement negotiator for the IS departments of Waste Management's three other business units in the U.S. and overseas. It also offers advice and counsel about IS architectures, standards and future technol-



Waste Management's Bacom runs a centralized IS staff of 400 but also has 10 managers reporting to him on the company's various regions throughout the country

ogies for those units.

"Operationally focused" is how Bacom describes this structure, which has been put in place during the past three years. The decentralized component consists of regional chief information officers responsible for each of Waste Management's nine regions throughout the country. A 10th regional CIO is located in Oak Brook.

"These individuals report to systems but have a strong dotted line [responsibility] to the business in the region," Bacom says.

The regional operations, made up of 550 field locations, are IBM shops as well. One of IBM's earliest and largest Application System/400 customers, Waste Management began looking at the AS/400 in late 1988 and had production installations by May of the next year.

The field operations will eventually claim about 500 AS/400s to be used for everything from scheduling trash trucks to maintaining local customer lists and managing some of the company's more than 125 landfills (see story below).

The firm's largest centralized database is the customer information system, responsible for recording and tracking 3½ million bills per month.

That customer system, originally a Cobol-based program running in VSAM and now a Software AG of North America Natural/Adabas database running under MVS/ESA, will soon find its way onto IBM's newest and largest mainframe, the Enterprise System/9000 Model 720.

The next-generation host will replace an IBM 3090 Model 400J sometime this year and will join the development platform, an IBM 3090 Model 200, now in the Oak Brook data center.

Continuing to build and rebuild applications using computer-aided software engineering and other structured methodologies, Bacom says, will set the foundation for "a way to take strategic

Continued on page 54

A landfill of logistics, legislation and limits

Two decades ago, a landfill was a dump. Today, driven by increasingly stringent local and federal pollution legislation and consumer worries, landfills are going high-tech and can cost as much as \$60 million.

Information systems play a role here, too. "The systems help enforce controls around those restrictions," says Steve Michael, senior director of North American development at Waste Management.

Waste Management is moving to replace the computers at its landfills — now primarily IBM System/38s — with Application System/400s. It has already deployed the new IBM midrange system at 10 of the largest of its 125 landfills. Currently, the landfills communicate with the home office in Oak Brook, Ill., at night in batch mode. But Michael envisions a time when peer-to-peer cooperative processing will be the norm. This will be especially important in big cities, so daily and monthly limits on haz-

ardous waste can be accurately monitored.

Computers are also handling the routing of trucks at the landfills. At one of Waste Management's newest facilities in Phoenix, for example, engineers sit at a control tower of sorts and use software to manage the red and green lights that direct trash trucks around the area.

"We're talking about high-speed transaction processing," Michael says, noting that trucks must be identified and their transaction entered within 15 to 20 seconds at the ticket-house window at the front gate. Many of the facilities also feature truck weighing scales integrated with the billing/accounting systems.

Other technologies at the landfills include radio-frequency identification of incoming trash trucks and video recording of the contents of the truck (integrated through the AS/400 along with the computerized transaction) that can be accessed on a terminal screen.

ELLIS BOOKER

Waste

CONTINUED FROM PAGE 53

advantage of these systems in the next time frame, 1993 to 1995." Among those future projects, he predicts, will be some kind of Systems Application Architecture-based executive information system.

With 35,000 employees, Waste Management of North America is by far the largest unit of Waste Management, Inc. The parent also owns Waste Management International, which services a dozen foreign countries; a 79% stake in Chemical Waste Management; and a controlling interest in Wheelabrator Technologies, Inc., a \$1.5 billion incineration company in Hampton, N.H.

Bacom, who has been in charge of Waste Management of North America's systems department since August 1988, joined the company in 1977 from Arthur Andersen & Co., where he was an auditor. Like the regional CIOs who report to him, Bacom has a very strong financial background. "The measure of a controller in our company," Bacom says, "is one who can pull off the financial portion seamlessly while giving most of his focus to the business."

The significance of IS at Waste Management is underscored by the presence of Bacom's boss, Executive Vice President Pat Payne. Payne joined the company last August from IBM, where he was a marketing vice president in the Midwest region. Although only 10% of Payne's ac-

tivities revolve around IS, Bacom is glad to have such a knowledgeable advocate on the firm's executive committee.

The bottom line speaks for itself: Waste Management was the fifth most profitable publicly held diversified services firm in the U.S. in 1989. Its net income of \$562.1 million, a margin of 12.6%, only trailed that of AT&T, Paramount Communications, Inc., The Walt Disney Co. and Dun & Bradstreet Corp.

Responding to the question, "Why does a garbage company need IBM's biggest mainframe and an IS staff of 400?" Bacom replies, "We have a couple of national customers who we service in dozens or hundreds of locations. To provide a central bill for that kind of customer is not a minor event by any means."

Waste Management technology

Like other businesses that place a premium on operations and customer service, Waste Management is exploring several emerging technologies to maximize the efficiency of its systems and centralized services department.

Some of Waste Management's technologies include the following:

- **Intel Corp. i486-based computing.** Right now, only a few of Waste Management's nearly 4,000 Hewlett-Packard Co. and Compaq Computer Corp. personal computers are 486-based.

These are being allocated to power users in the company, including the home-office systems development staff, the regional chief information officers and some corporate managers.

- **Computer-aided software engineering (CASE).** Waste Management has different CASE tool vendors for different platforms: Software AG on the mainframe; Knowledgeware, Inc. and Synon, Inc. for the midrange; and Andersen Consulting for PC-based development.

- **Expert systems for logistics, telemetry and tracking.** Operating more than 125 landfills and about 14,000 collection and transfer trucks, Waste Management's scheduling demands rival that of many airlines. The company says it is exploring artificial intelligence technologies to optimize its scheduling.

- **On-board computers in trucks.** Waste Management would like to emulate Federal Express Corp. and others, but the harsh environments in which the garbage trucks operate — such as hot, dusty landfills — have proven too much for existing portables.

- **Private network.** The first node in Waste Management's private T1 wide-area network went on-line in December; the entire network is expected to be completed in July. The leased lines from MCI Communications Corp. and AT&T will carry the IBM Systems Network Architecture traffic between the home office and 550 locations throughout the country.

- **Electronic data interchange (EDI).** Waste Management provides some customers with EDI access into the garbage company's database to give real-time updates on billing information.

- **Database access.** The company and other garbage haulers can access the National Priorities Listing, a database of Superfund toxic waste dumps provided by the federal Environmental Protection Agency.

ELLIS BOOKER

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BOOK REVIEW

Anecdotal advice for companies taking a global approach

THE BORDERLESS WORLD: POWER AND STRATEGY IN THE INTERLINKED ECONOMY

By Kenichi Ohmae
HarperCollins Publishers, \$21.95

If you are an information systems professional who has the 'G' word — globalization — on your mind, add Kenichi Ohmae's latest easy-reading book to your list for the new year. But don't try to plan your firm's global expansion around it.

Although *The Borderless World: Power and Struggle in an Interlinked Economy* contains provocative observations on global business, it lacks the nitty-gritty detail business managers need to operate profitably worldwide.

Ohmae primarily relays anecdotes from his work as a consultant at the international firm of McKinsey & Co. He also serves up plenty of jibes at "Japanophobes" and preachy paragraphs on why government — particularly the U.S. government — should keep its paws off business.

Ohmae's ultraconservative political bent is obvious, but just in case you somehow miss his point, he does some evangelistic posturing: "Governments have become the major obstacle for people to have the best and the cheapest from anywhere in the world," he writes, adding that governments should stop protecting "certain industries and clusters of people."

Ohmae lets you know up front that in this reader/author partnership, he is the one with the wisdom, and you are the blank slate. This appears to correspond with his view of Japan's relationship to the rest of the world. He points out that with all the current hoo-ha over globalization, companies need role models. "With few exceptions," he says, "the models they have found and the examples they are studying are Japanese."

Wade through his arrogance, though, and you will fish out some solid ideas. The principle he harps on most is weathered, but it is sound advice nonetheless. He states that would-be multinational firms must serve their clients, not themselves. Instead of one-upping the competition by making a faster or smaller edition of the latest gadget, they should wow buyers with goods carefully designed for user needs and wants. The profits, we assume, will follow.

Another big idea of Ohmae's is not completely his own, but he does invent a snappy new buzzword for it. What he calls "insiderization" actually incorporates what Sony Corp.'s founder Akio Morita has termed "local globalization."

Basically, Ohmae says, if you are thinking of going into a new country, carefully study the habits and beliefs of the locals before trying to foist your products on them. Then set up self-sufficient manufacturing, marketing and distribution outfits within that country so you don't get stuck in the wait-for-the-OK-from-HQ trap. This practice, Ohmae says, is what will differentiate today's global corporations from their predecessors. He likens predecessors' efforts to the Roman Cath-

olic Church in their manner of pushing central dogma down the throats of "barbarians."

The Borderless World would not be a book by a Japanese economic thinker without the requisite justification of Japanese investment in the U.S. or a pish-poshing of businessmen who ask their governments for help to compete on foreign soil.

Ohmae returns to these themes many times in the book, although nowhere as succinctly as in the last chapter. Implying that the influx of Japanese cash can only strengthen the U.S.,

Ohmae writes: "Today's high-quality investments from overseas are like the immigrants in years past who helped build up America's economy and society."

If you're short on time, just read the first three chapters, in which Ohmae makes most of his salient points. Know, too, that he touches only superficially on any tangible steps a company can take to ease its trip to other lands, mentioning that firms should consolidate accounting systems at the divisional, rather than corporate, level. In addition, he advises companies to connect regional centers

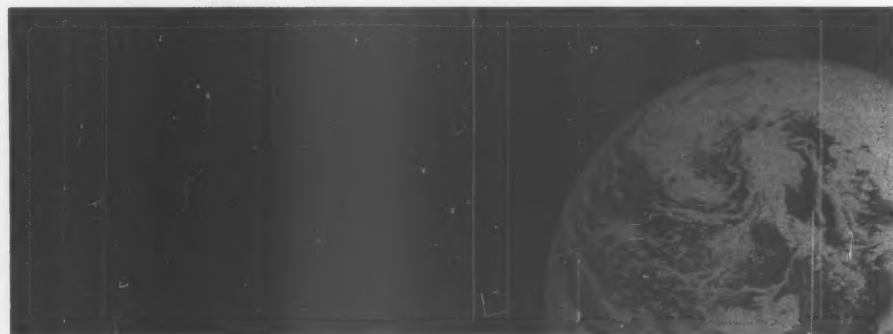
horizontally by networks.

There are only so many ways to say that to be globally successful, you need smart people who will put the customer first and an investment in long-term development strategies that may not pay off immediately. Yet Ohmae restates this tenet again and again. And again. He is rather like the dear old uncle who comes to holiday dinners, telling the same stories from his boyhood. Those tales undeniably hold good lessons, but your attention wanders with each repetition. You have to wonder whether someone who repeats himself so often really wants to teach or just likes to hear himself yammer.

KIM S. NASH

Nash is a *Computerworld* researcher, features.

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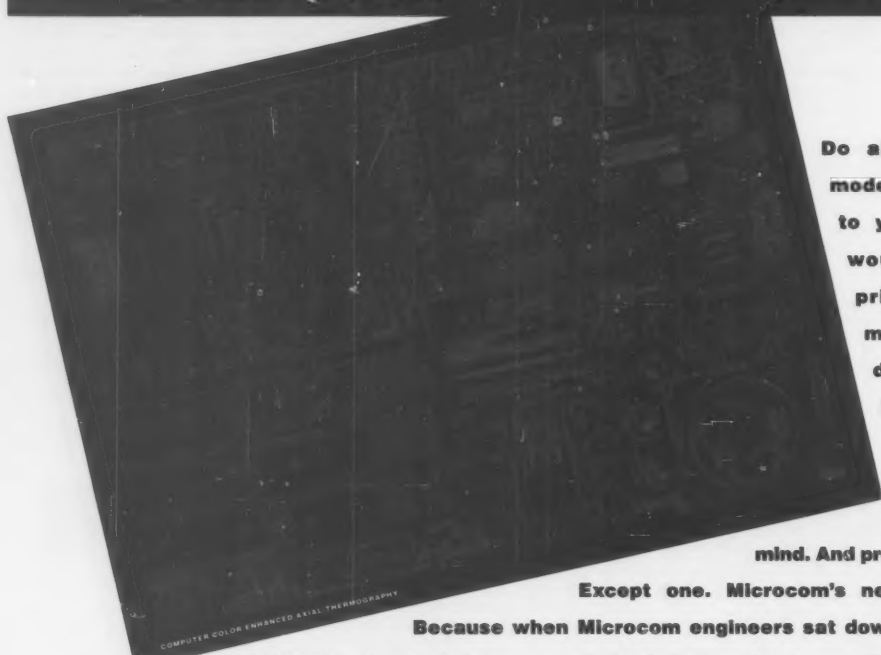
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PRODUCT SPOTLIGHT

HIGH-END MODEMS

Safe at any speed?

BY ROBERT FELDMAN

By the time V.32 bis — the proposed standard for dial-up modems that would define 14.4K bit/sec. throughput — builds up enough steam to become a real, as opposed to a declared, market standard, its moment of opportunity may have passed.

The Consultative Committee for International Telephony and Telegraphy (CCITT) is currently preparing to ratify V.32 bis, and a dozen assembly lines are gearing up for production of these modems. But there is considerable skepticism about its ability to spur a mass migration.

For many users, the incentive is less than compelling. Corporate penny-pinching is endemic, and most high-end sites have just finished replacing their V.22 modems with V.32 devices. On top of that, some observers warn that high transmission speeds can result in lost data.

Reasonable cost

It's not as though the asking price is exorbitant. Modems are exploring new price depths, and while V.32 bis modems sell for a small premium over their younger siblings, the 9.6K bit/sec. V.32 modems, market analysts say that premium will evaporate during the next year.

Additionally, there is no doubt that certain users will be attracted to the speed of V.32 bis. The new standard is expected to find its way into industries needing speedy interactive communications, such as insurance, financial services, banking, brokerage, credit checking, automated teller machine networking and off-hour polling. V.32 bis is also aimed at bandwidth-intensive applications such as bulk file transfers and communications with multiuser sites.

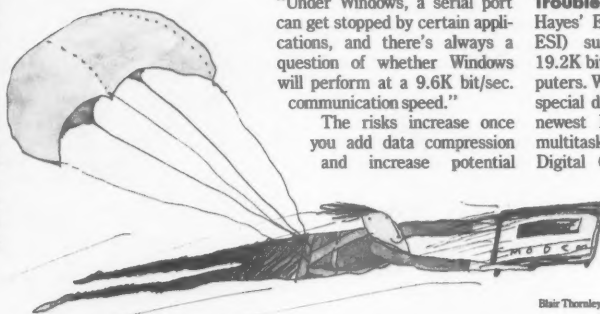
Some corporations and government organizations are expected to embrace the enhanced throughput of the standard to cut line charges for the masses of files they transmit regularly.

Feldman is a free-lance writer in Pittsburgh.

The faster they can get information down the line, the more money they save. With the 4-to-1 squeeze available from V.42 bis data compression, the theoretical throughput of V.32 bis rises to 57.6K bit/sec.

The higher speed will also attract people currently using V.32 modems to back up leased lines and will appeal to researchers engaged in data-intensive graphics and imaging as well as computer-aided design and engineering applications.

Another possible niche is



transmitting cellular data from remote or mobile sites. The higher speed works well in remote connections to a local-area network; at 14.4K bit/sec., the remote personal computer essentially becomes a part of the LAN.

However, some analysts point to risks associated with high-speed communications. One barrier is buried within the microprocessor's circuits, especially in multitasking operations. If your PC is running IBM's OS/2 operating system or Microsoft Corp.'s Windows on top of a high-speed communications pro-

gram in the background, interrupts will cause the processor to leave the communications program, even while the modem keeps transmitting. The result is lost data.

Stay in foreground mode

One simple way to avoid this is to not run communications in the background. "You shouldn't be doing serial communications while in some other program, because there are always parameter changes," says Thomas Nolle, principal at CIMI Corp., a consulting firm in Voorhees, N.J. "Under Windows, a serial port can get stopped by certain applications, and there's always a question of whether Windows will perform at a 9.6K bit/sec. communication speed."

The risks increase once you add data compression and increase potential

throughputs. However, that sort of compression would never be done without V.42 error control, Nolle says, and the V.32 bis modulation scheme isn't any worse or more sensitive to line conditions than V.22 modulation. Yet there are caveats.

"Assuming you're using the new Trellis coding [error control], going faster doesn't mean more problems with the modems," Nolle says, "but at higher speeds, you have a higher sensitivity to line conditions. Then you'd better stay below the 9.6K bit/sec. rate entirely, since line impairments are more forgiving at slower speeds."

Another possible booby trap is that the original serial port on

most MS-DOS devices in the IBM Personal Computer XT and AT classes, as well as some Intel Corp. 80386-based machines, will not operate at speeds higher than 9.6K bit/sec. This is overcome with the new enhanced serial port (ESD) specification, which is claimed to ensure data integrity at speeds as high as 38.4K bit/sec. Developed by Hayes Microcomputer Products, Inc., ESI is a system of communications software with a separate driver that supports data buffering and flow control.

Troubleshooting vendors

Hayes' ESP card (a version of ESI) supports operations at 19.2K bit/sec. on MS-DOS computers. When supplemented by a special driver, the firm says its newest ESP version supports multitasking operating systems. Digital Communications Associates, Inc. offers similar capabilities in its Crosstalk MK.4 Version 2.0 card.

Hayes, usually considered the industry's standard setter, is generally skeptical of the reliability of V.32 bis transmission. The firm says it will "support" V.32 bis and offer "an easy upgrade path" to it for current Ultra 96 owners, but it has yet to introduce a product.

Other vendors play down high-speed warnings, pointing out that V.32 bis is not a dramatic change in technology from other modem standards.

"Except for echo canceling, it's virtually identical to V.33, which has been used in leased-line, four-wire systems for the last six years," says Ken Krechmer, president of Action Consulting in Palo Alto, Calif.

Until the day that the CCITT ratifies the new standard, there will continue to be some fine-tuning of V.32 bis. This has also caused some foot dragging by major manufacturers. For example, the method of rate negotiation between modems may be modified, as could the procedure for arranging rate fallback under difficult line conditions.

Many vendors are simply encouraging people to use data

Continued on page 59

INSIDE

A Look at Fax Modems
LAN-based systems are the new way to fax from a PC. Page 60.

What's New?
Modem software has come a long way since the mid-1980s. Page 60.

Product Guide
A comprehensive listing of modems running at 14.4K bit/sec. Page 61.

Looking at V.32 bis: The user point of view

While some buyers walk the V.32 bis fence, others are taking the plunge. At the Federal Aviation Administration (FAA), Judy Maske, an FAA systems analyst, has already recommended an upgrade to V.32 bis to the General Services Administration government procurement agency in

Washington, D.C.

"We certainly won't throw away what we've got," Maske says, "but the V.32 bis products are downward-compatible, and they're 50% faster in communications with each other. That means we can cut line costs."

Currently, in the FAA's

Southwestern region, several hundred V.32 modems from Practical Peripherals, Inc. — recently acquired by Hayes Microcomputer Products, Inc. — talk to similar U.S. Robotics, Inc. modems at a rate of 19.2K bit/sec. with the help of MNP-5, the de facto standard from Micro-

com, Inc. for error control and data compression.

Other buyers will wait. "We could use more speed," says John Tegeler, networking manager at American Door Co. in Walkerton, Ind., "but the system is doing the job, and I won't have to make a decision on the new modems for at least six months."

Tegeler says he is interested

in testing V.32 bis, however. With a system built around the Telebit Corp. Trailblazer non-standard modems, American Door does its heavy data transfers overnight on dial-up lines to 10 company sites nationwide.

Using the vendor's data compression protocol, Tegeler is seeing throughputs ranging from 4.8K to 13K bit/sec.

ROBERT FELDMAN

PANEL OF EXPERTS

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ASK THE VENDOR

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Joe Vicini
Chief of Applications
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CMS 910 allows you to monitor real-time line conditions, change local and remote modem options, collect call statistics to monitor traffic patterns and test up to 16,000 modems in the system. With this information, you can change modem options to improve performance, evaluate the need for a programmable telephone connection or contact the carrier to determine if improvements are feasible.

I use the Worldport portable modem to connect my office computer with my home office. I would like to know when Touchbase plans to introduce 9.6K bit/sec., V.32 internal modems for laptops.

Sheldon Laube
Chief Information Officer
Price Waterhouse
New York

TOUCHBASE SYSTEMS, INC.: Internal modems are confined by size, shape and power consumption. They must fit into oddly-shaped spaces and connect to the computer via a proprietary interface. The modem is often restricted to a small amount of power because of the batteries' limitations.

These limitations and the high power and size requirements of conventional V.32 modems have restricted the availability of any internal V.32 models for laptop computers.

While there is no definite time frame, we are working closely with major laptop manufacturers to evolve a modem within their design criteria.

Continued from page 57

compression and error control on their V.32 modems to achieve the same throughput as V.32 bis.

For example, NEC Corp.'s N9631 is a V.32 modem that can be used either as a two-wire dial-up or leased-line device. It runs four times as fast with MNP-5 at a cost of \$150. Hayes offers the Ultra Fast upgrade, which for \$299 can compress data on the Hayes Ultra 96 modem.

Compression cannot be used in all instances, however. Synchronous data and some types of asynchronous data cannot be compressed at all. On the other hand, compression works well in generalized file transfers and terminal-to-host access.

V.32 bis may become attractive, even to buyers not ready for it, via vendor-offered migration policies.

For instance, Codex Corp. says it will give liberal allowances for trade-ins of its V.32 2264 modems. Forval America, Inc. offers a telephone-upgradable product,

Leased line holds high ground

If you're wondering where the action is in leased-line analog modems, you'd better look up — to 14.4K bit/sec. speeds and higher. That is where sales are forecast to remain steady through the end of the century, market researchers say. Anything slower will drop off in sales, according to Frost & Sullivan, Inc. in New York.

The word has been that new digital services and plummeting costs for these offerings will hit all leased-line analog modems where it hurts. However, Frost & Sullivan and International Data Corp. say they expect lower equipment costs to keep interest in at least the high end of this category at a steady level.

Digital transmission may be tempting, but economic uncertainties are tempering bold spirits. "A year or two ago, I was thinking how switched 56K bit/sec. digital could give me faster communications," says John Tegeler, networking manager at American Door Co. in Walkerton, Ind. "Now, I'm thinking about my company taking my job to pay for it."

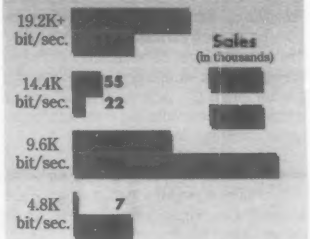
Network management will also keep customers interested in leased-line analog modems, Frost & Sullivan says.

The capabilities of leased-line modems will continue to appeal to large corporations with a low tolerance for time delays.

ROBERT FELDMAN

Leased-line forecast

According to a survey of 5,000 telecom employees, 1994 sales of 14.4K bit/sec. and higher modems will nearly double 1989 sales



Source: Frost & Sullivan, Inc.

CW Chart: Paul Mock

Latest standards

V.29: Defines 9.6K bit/sec. modems for point-to-point, four-wire leased lines.

V.32: Defines family of two-wire, up to 9.6K bit/sec. duplex modems for dial-up and leased lines.

V.32 bis: Defines 14.4K, 12K, 9.6K, 7.2K, 4.8K bit/sec. modems for dial-up lines.

V.33: Defines 14.4K bit/sec. modems for point-to-point, four-wire leased lines.

V.42: LAPM error control, 1,200 bit/sec. and higher.

MNP Levels 2, 3 and 4: Microcom, Inc.'s error-control recommendation; considered to be part of the CCITT V.42 standard.

V.42 bis: 4-to-1 data compression standard that works with 1,200 bit/sec. and higher modems.

MNP Level 5: 2-to-1 data compression for 1,200 bit/sec. and higher modems.

MNP Level 7: 3-to-1 data compression.

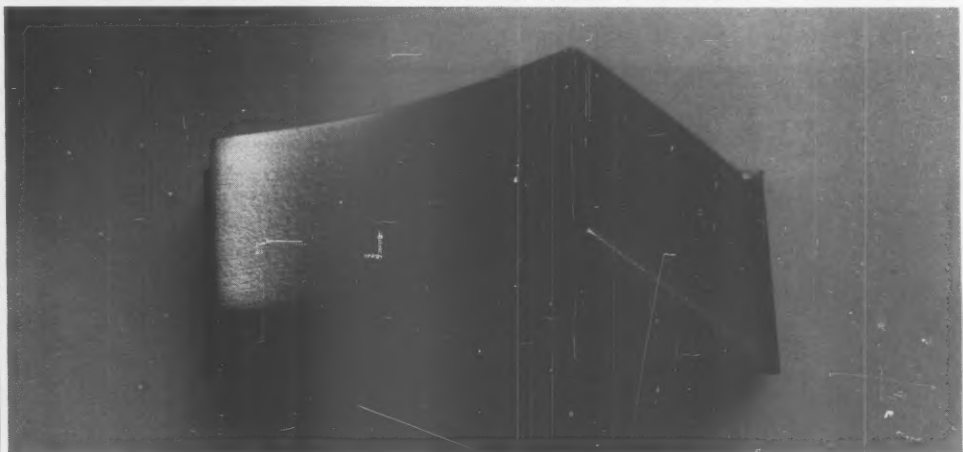
Sources: Omnicon, Inc. and U.S. Robotics, Inc.

Forval-Link, which is proprietary software that allows new modem enhancements and speeds up to 19.2K bit/sec. to be reconfigured and downloaded over phone lines.

One rule will never change: No matter how fast a device operates, someone will want to go faster. A CCITT group of rapporteurs will be meeting next month to consider the next V standard for switched connections. Its working name: "V.fast."

Dial-up V.fast is meant to modulate at 19.2K bit/sec. or faster, just as leased lines already do, but with the same reliability as that of switched V.32 bis. If a recommendation results, the specifications could be submitted to the CCITT governing body by the end of this year and ratified as a new standard before 1993.

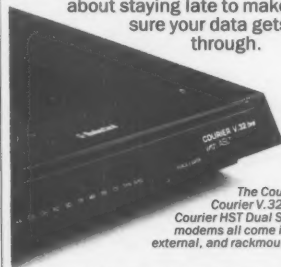
What then? Will V.32 bis become obsolete? It depends on the cost, the state of the economy and the market. If V.32 bis is slow getting off the ground this year and next, V.fast could leapfrog it. •



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PC fax modems gain votes

BY ERIC ARNUM

Personal computer facsimile modems have never won popularity contests since their 1986 debut. The problem is that they demand a lot of users, sometimes requiring them to open up their PCs and learn whole new command structures to operate them.

Even at \$100 a pop, 1990 sales of these systems are forecast to barely hit \$10 million, compared with conventional fax machines, whose 1990 sales will reach

Arnum is editor of the "Electronic Mail and Micro Systems" newsletter in New Canaan, Conn.

\$2 billion in the U.S. alone.

Newer fax modem systems — from Gammalink Graphics Communications in Sunnyvale, Calif.; Brooktrout Technology, Inc. in Wellesley, Mass.; Biscom, Inc. in Billerica, Mass.; Castelle Systems in Santa Clara, Calif.; 3M Co. in St. Paul, Minn.; and Spectrafax Corp. in Naples, Fla. — are showing more promise. These are not stand-alone but are designed to be shared on a local-area network.

The word is that these systems are as easy to operate as a shared printer: The user simply sends the file and a telephone number. This is apparently of interest to users, with 1990 sales forecasts reaching

the \$100 million mark.

While these modem systems sell for as much as \$4,000, they can save users money on phone costs. With users sharing the fax, high volumes may qualify the owner for a better discount on an AT&T WATS line.

What makes the newer products even more viable is the enhanced quality and clarity of the computer/fax page. Teamed with sophisticated graphics packages and digitized Adobe Systems, Inc. Postscript images, the newest computer/fax systems can create documents that look like originals at the receiving end.

This has made graphics capabilities a big selling point. Faxcom/Publisher from Biscom, for example, is ideal for applications involving heavy graphical content.

For about \$200, the firm will create bit-mapped images of business forms that the customer can store in Faxcom/Publisher. When the document is sent, it looks like a form filled in by a typewriter.

Xpedit Systems, Inc. in Eatontown, N.J., sells a service based on hardware from Gammalink. The service accepts virtually any computer document, including some computer-aided design and manufacturing images, and translates it into a fax format. Customers send files via a modem to the Xpedit network, which then forwards the files to as many as several thousand destinations.

Xpedit's graphics capabilities enable the system to accept a wide variety of word processor files as well as Postscript and Epson America, Inc. print files. •



UDS V.32 Modems: winners at 19.2 kbps—now FastTalk doubles the speed

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Now comes the FastTalk V.32/42b—a modem that is specifically designed for PC applications and is fully compliant with CCITT's V.42bis recommendation. Meeting this standard gives the V.32/42b a maximum data rate of 38.4 kbps!

The modem is particularly useful for bit-intensive data transfers, such as engineering graphics, image processing and complex financial operations. Data Rate is automatically adjusted to 9600, 4800, 2400 or 300 bps (CCITT V.32 and V.22bis). At the 9600 bps rate, trellis coding gives the FastTalk V.32/42b an exceptionally high tolerance for noisy lines.

For accurate communication over

worst-case lines, the unit incorporates V.42 LAP-M and MNP 4 error control functions. A full complement of on-board test functions is included, and eight LEDs provide easy monitoring of the unit's operation and built-in diagnostic features.

Get acquainted with the latest winner in the UDS V.32 family. For technical details and quantity pricing, contact UDS, 5000 Bradford Drive, Huntsville, AL 35805-1993. Telephone 205/430-8000; FAX 205/430-8926.



MNP* is a registered trademark of Microcom Systems, Inc. Created by Dayner/Hall, Inc., Winter Park, Florida

Modem software

BY CHRISTOPHER HERBST

Communications software for modems has come a long way since its early days of transferring files among personal computers and allowing access to host computers.

The following specialized functions are found in dedicated programs:

- **Local-area network support.** This makes it possible for users to share a modem or set of modems. A few general-purpose modem programs, such as Digital Communications Associates, Inc.'s Crosstalk MK.4 Version 2.0, support LANs. Other vendors — such as Hayes Microcomputer Products, Inc., manufacturer of Smartcom — market special LAN versions of their products.

- **Remote-access software.** This allows the operator of a remote PC to dial in over a telephone line and take full control of the host PC.

CO/Session 5.0 by Triton Technologies, Inc. is the first remote-control package to provide remote mouse operation.

Microcom, Inc.'s Carbon Copy Plus Version 5.0 provides a universal graphics translator that displays identical graphics on host and remote computers.

Norton-Lambert Corp.'s Close-Up, The Modem Remote combines remote-control, automation and terminal communications in one package.

- **Windows support programs.** These packages allow data processing functions to be performed on local text and data files in a separate window during a communications session.

Future Soft Engineering, Inc.'s Dynacomm comes in synchronous and asynchronous editions and includes a number of advanced features, including windows support. Terminal, a subset of Dynacomm that does not include all of its features, is bundled with Microsoft Corp.'s Windows 3.0.

Herbst is a free-lance writer based in Washington, D.C.

Dial-up/leased-line modems running 14.4K bit/sec.

VENDOR	PRODUCT	MINIMUM/MAXIMUM DATA TRANSFER RATES ¹	FALLBACK RATES	FALL FORWARD CAPABILITIES	SYNCHRONOUS/ASYNCHRONOUS	HALF DUPLEX/FULL DUPLEX	LINE REQUIREMENTS	MODEM CONFIGURATION	MODEM PROTOCOLS SUPPORTED	ERROR CORRECTION PROTOCOL SUPPORTED	DATA COMPRESSION PROTOCOL SUPPORTED	BUILT-IN NETWORK MANAGEMENT CAPABILITY	COMPATIBLE WITH HAYES AT COMMAND SET	SECURITY FEATURES	PHYSICAL CONFIGURATION	DIMENSIONS (INCHES)/WEIGHT (POUNDS)	PRICE
AT&T Paradyne (813) 530-3000	Comsphere 3460	9.6K - 14.4K	12K, 9.6K	Yes	Both	Both	Leased-line/4-wire	Point-to-point	V.33, proprietary	Trellis coding	None	Yes	No	Front-panel lockout	Stand-alone	3.47 by 13.00 by 13.00/8	\$4,150
	Comsphere 3460 TM	9.6K - 14.4K	NA	No	Both	Both	Leased-line/4-wire	Multipoint	Proprietary	Trellis coding	None	Yes	No	Front-panel lockout	Stand-alone	3.47 by 13.88 by 13.00/6	\$4,150
	Comsphere 4464	9.6K - 14.4K	12K, 9.6K	Yes	Both	Both	Leased-line/4-wire	Point-to-point	V.33, proprietary	Trellis coding	None	Yes	No	Front-panel lockout	Rack mount	15.3 by 19 by 16.8/107	\$4,050
	Comsphere 4464 TM	9.6K - 14.4K	NA	No	Both	Both	Leased-line/4-wire	Multipoint	Proprietary	Trellis coding	None	Yes	No	Front-panel lockout	Rack mount	15.3 by 19 by 16.8/107	\$4,050
BCH Equipment Corp. (813) 530-9177	14.4S, 14.4M	2,400 - 14.4K	12K, 9.6K	No	Synchronous	Both	Leased-line/4-wire	Point-to-point, multipoint	V.29, V.42	None	None	No	No	None	Stand-alone, rack mount	2.9 by 10.5 by 14.7/6	\$1,295 (14.4S), \$1,795 (14.4M)
British Telecom, Inc. (703) 818-1770	4142 TCX	4.8K - 14.4K	12K - 4.8K	Yes	Both	Full duplex	Dial-up/2-wire, leased-line/2-wire, leased-line/4-wire	Point-to-point	V.32, V.32 extended, V.33	V.42	V.42 bis	Optional	Optional	Optic. vsi encryption, dial back-up	Stand-alone, rack mount	3 by 9 by 15.5/11.6	NP
Case/Datatel (301) 317-7710	DCM 4144	9.6K - 14.4K	12K, 9.6K	No	Synchronous	Both	Leased-line/4-wire	Point-to-point	V.29, V.33	Trellis coding	None	Yes	No	None	Stand-alone, rack mount	3.25 by 14.25 by 13.82/9.5	\$3,395 - \$4,595
Codex Corp. (508) 261-4000	336X Family	1,200 - 14.4K (asynchronous)	14.4K - 7.2K	Yes	Both	Both	Dial-up/2-wire, leased-line/2-wire, leased-line/4-wire	Point-to-point	Bell 103, 212, V.21, V.22, V.22 bis, V.32, V.32 bis	V.42, MNP level 4	V.42 bis, MNP level 5	Optional	Yes	Password, callback	Stand-alone, rack mount (2 modems per card)	2.75 by 6.7 by 9.6/3.1	\$1,195 - \$1,595
Data Race, Inc. (512) 558-1900	Action 1496	1,200 - 14.4K	12K - 4.8K	Yes	Both	Full duplex	Dial-up/2-wire, leased-line/2-wire, leased-line/4-wire	Point-to-point	V.29, V.32, V.33	V.42, MNP levels 2 - 5	MNP level 5	No	Yes	None	Stand-alone, rack mount	8.5 by 10.13 by 2/2.6	\$1,795
DCB of Champions, Inc. (217) 352-3207, (800) 637-1127	PL 14.4	14.4K	9.6K, 7.2K, 4.8K	No	Synchronous	Full duplex	Leased-line/4-wire	Point-to-point	V.29, V.33	None	None	No	No	None	Stand-alone, rack mount	2.25 by 10.25 by 9.75/4	\$1,800
	PL 14.4 Plus	14.4K	9.6K, 7.2K, 4.8K	No	Synchronous	Full duplex	Leased-line/4-wire	Point-to-point	V.29, V.33	None	None	Yes	No	None	Stand-alone, rack mount	2.25 by 10.25 by 9.75/4	\$2,050
Digicom Systems, Inc. (408) 262-1277	9624 LE+, 9624 E+	1,200 - 14.4K	12K - 2,400	Yes	Both	Both	Dial-up/2-wire, leased-line/2-wire, leased-line/4-wire (9624 E+)	Point-to-point	V.22 bis, V.32, V.33 bis	MNP levels 2 - 4	V.42 bis, MNP level 5	No	Yes	Callback	Stand-alone	1.5 by 6.5 by 9/3, 2.5 by 9 by 11/4	\$995, \$1,295
	9624 PC+	1,200 - 14.4K	12K - 2,400	Yes	Both	Both	Dial-up/2-wire, leased-line/2-wire	Point-to-point	V.22 bis, V.32, V.33 bis	MNP levels 2 - 4	V.42 bis, MNP level 5	No	Yes	Callback	Internal	1 by 4 by 13/1.8	\$995
	9624 R+	1,200 - 14.4K	12K - 2,400	Yes	Both	Both	Dial-up/2-wire, leased-line/2-wire, leased-line/4-wire	Point-to-point	V.22 bis, V.32, V.33 bis	MNP levels 2 - 4	V.42 bis, MNP level 5	Optional	Yes	Callback	Rack mount	0.8 by 7 by 11/2	\$1,295
Fastcomm Communications Corp. (703) 630-3900	FDX 9096LJ	300 - 14.4K	12K - 100	Yes	Both	Both	Dial-up/2-wire, leased-line/2-wire, leased-line/4-wire	Point-to-point	V.32, V.33	V.42, MNP levels 1 - 4	V.42 bis, MNP level 5	Yes	Yes	Password, callback, hardware check, answer back	Internal, stand-alone, rack mount	1.5 by 6.5 by 10/1.2	\$1,299
Forsal America, Inc. (801) 561-8080	IM14400	14.4K	12K, 9.6K, 4.8K, 2,400, 1,200	No	Asynchronous	Full duplex	Dial-up/2-wire	Point-to-point	Bell 212A, V.22, V.22 bis, V.32, V.33 bis	V.42, MNP levels 2 - 4, LAP M	V.42 bis, MNP level 5	No	Yes	None	Internal	4 by 13.3 by 1/1	\$1,045
	SA14400	14.4K	12K, 9.6K, 4.8K, 2,400, 1,200	No	Asynchronous	Full duplex	Dial-up/2-wire	Point-to-point	Bell 212A, V.22, V.22 bis, V.32, V.33 bis	V.42, MNP levels 2 - 4, LAP M	V.42 bis, MNP level 5	No	Yes	None	Stand-alone	2 by 10 by 8/2.25	\$1,245
General Datacomm, Inc. (303) 574-1118	Datcomm 14433	9.6K - 14.4K	12K, 9.6K	Yes	Both	Full duplex	Leased-line/4-wire	Point-to-point	V.33	None	None	Optional	No	None	Stand-alone, rack mount	3.9 by 10.9 by 12.5/6	\$2,295
	Multipoint 14433	2.4K - 14.4K	12K, 9.6K	No	Both	Full duplex	Leased-line/4-wire	Point-to-point	V.33	None	None	Optional	No	None	Stand-alone, rack mount	3.9 by 10.9 by 12.5/6	\$3,495
	NMS 14433	14.4K	12K, 9.6K	NP	Synchronous	Full duplex	Leased-line/4-wire	Point-to-point	V.29, V.33	Trellis coding	None	Yes	No	None	Stand-alone, rack mount	3.9 by 10.9 by 13/7.1	\$3,625 (rack mount)
	GDC Multipoint 14433	1,200 - 14.4K	12K, 9.6K	NP	Both	Full duplex	Leased-line/4-wire	Point-to-point	V.29, V.33	Trellis coding	None	Yes	No	None	Stand-alone, rack mount	10.5 by 19 by 13.5/41.5	\$3,495
HT Communications, Inc. (619) 489-0206	Pro 1000	4.8K - 14.4K	12K, 9.6K, 7.2K, 4.8K	Yes	Synchronous	Full duplex	Leased-line/4-wire	Point-to-point	V.29, V.33	None	None	No	No	None	Stand-alone, rack mount	2.4 by 8.5 by 11/1	\$1,495
IBM (914) 786-1900	7861 Models 016, 026, 046	14.4K	12K	Yes	Both	Both	Dial-up/2-wire, leased-line/2-wire, leased-line/4-wire	Point-to-point, multipoint	V.33	Proprietary LPDA	None	Yes	No	Password	Stand-alone	4.81 by 8.08 by 14.57/7.37	\$2,395 (016), \$5,735 (026), \$8,970 (046)
	7865 Models 026, 046	14.4K	12K	Yes	Both	Both	Dial-up/2-wire, leased-line/2-wire, leased-line/4-wire	Point-to-point, multipoint	V.33	None	None	Yes	No	Password	Rack mount	10.43 by 1 by 14.76/2.75 (two-part), 10.43 by 2 by 14.76/3.3 (four-part)	\$4,970 (026), \$5,515 (046)

¹Rates do not include data compression.

²MNP stands for Microcom Networking protocol, a trademark of Microcom, Inc.

The companies included in this chart responded to a recent survey conducted by *Computerworld*. When a vendor is unable to provide specific information about its product, the abbreviation NP (not provided) is used. When a question does not apply to a vendor's product, the abbreviation NA (not applicable) is used. Further product information is available from the vendors.

HIGH-END MODEMS

PRODUCT SPOTLIGHT

VENDOR	PRODUCT	MINIMUM/MAXIMUM DATA TRANSFER RATES ¹	FALLBACK RATES	FALL FORWARD CAPABILITIES	SYNCHRONOUS/ASYNCHRONOUS	HALF DUPLEX/FULL DUPLEX	LINE REQUIREMENTS	MODEM CONFIGURATION	MODEM PROTOCOLS SUPPORTED	ERROR CORRECTION PROTOCOL SUPPORTED	DATA COMPRESSION PROTOCOL SUPPORTED	BUILT-IN NETWORK MANAGEMENT CAPABILITY	COMPATIBLE WITH HAYES AT COMMAND SET	SECURITY FEATURES	PHYSICAL CONFIGURATION	DIMENSIONS (INCHES)/WEIGHT (POUNDS)	PRICE
Memotec Datacom, Inc. (800) 681-9999	IDM 14FP	4.8K - 14.4K	12K, 9.6K, 7.2K, 4.8K	No	Both	Both	Leased-line/4-wire	Point-to-point, multipoint	V.38, V.33	None	None	Yes	No	Password	Stand-alone, rack mount	2.75 by 11.75 by 17/9	\$4,095 (stand-alone), \$3,995 (rack mount)
	IDM 14.4A	4.8K - 14.4K	12K, 9.6K, 7.2K, 4.8K	No	Both	Both	Leased-line/4-wire	Point-to-point	V.29, V.30	None	None	Yes	No	Password	Stand-alone, rack mount	2.75 by 11.75 by 17/9	\$3,895 (stand-alone), \$3,795 (rack mount)
Micom Communications Corp. (805) 583-8600	MB-A96-1, MB-A144-DP, M4096/ V.29+	9.6K - 14.4K	12K - 4.8K	Yes	Synchronous	Both	Dial-up/2-wire, leased-line/4-wire	Point-to-point, multipoint	V.29, V.32	None	None	No	No	Configurable security ID number	Internal, stand-alone, multiplexer	8.75 by 2.25 by 11.25/3.5 (stand-alone)	\$750 - \$1,995
Network Equipment Technologies, Access Products Division (800) 686-1411	ND4-1440	14.4K	12K, 9.6K	Yes	Synchronous	Full duplex	Leased-line/4-wire	Point-to-point	V.29, V.33	None	None	Yes	No	Password	Stand-alone, rack mount	1.75 by 8.6 by 10.06/3.9	\$2,195
Octocom Systems, Inc. (508) 656-0050	OSI 8196	300 - 14.4K	12K, 9.6K, 7.2K	Yes	Both	Both	Dial-up/2-wire, leased-line/2-wire	Point-to-point	Bell 103, 202S, 212A, V.21, V.22 A/B, V.22 bis, V.23, V.32, V.32 bis	V.42, MNP level 4	V.42 bis, MNP level 5	No	Yes	Password, callback	Stand-alone	1.9 by 8 by 11.1/3	\$1,195
	OSI 8596	300 - 14.4K	12K, 9.6K, 7.2K	Yes	Both	Both	Dial-up/2-wire, leased-line/2-wire	Point-to-point	Bell 103, 201C, 202S, 206B, 212A, V.21, V.22 A/B, V.22 bis, V.23, V.32, V.32 bis	V.42, MNP level 4	V.42 bis, MNP level 5	Yes	Yes	Password, callback	Stand-alone	1.8 by 7.6 by 10.9/5	\$1,195 +
	OSI 8996	300 - 14.4K	12K, 9.6K, 7.2K	Yes	Both	Both	Dial-up/2-wire, leased-line/2-wire, leased-line/4-wire	Point-to-point	Bell 103, 202S, 206A/B, 212A, V.21, V.22 A/B, V.22 bis, V.26, V.26 bis, V.27 ter, V.28, V.32, V.32 bis	V.42, MNP level 4	V.42 bis, MNP level 5	Yes	Yes	Password, callback	Stand-alone, rack mount	1.8 by 7.6 by 10.9/5	\$1,195 +
Olivetti (800) 235-3900	CLP 14.4, CLP 14.4R	9.6K - 14.4K	12K, 9.6K	No	Synchronous	Full duplex	Dial-up/2-wire, leased-line/4-wire	Point-to-point	V.33	None	None	No	No	None	Stand-alone, rack mount	3.3 by 11 by 11.75/7.9, 1.75 by 8.5 by 10.5/2.1 (rack)	\$1,995 (CLP 14.4), \$1,895 (CLP 14.4R)
	V.32/14.4	300 - 14.4K	12K	Yes	Both	Full duplex	Dial-up/2-wire, leased-line/2-wire, leased-line/4-wire	Point-to-point	Bell 103, Bell 208, Bell 212, V.21, V.22, V.22 bis, V.23, V.32, V.32 bis, V.33	V.42, MNP levels 1-4	V.42 bis, MNP level 5	No	Yes	Password, callback	Stand-alone, rack mount	2.5 by 9.7 by 10.1/2.2	\$1,595
Pacell Datacomm (301) 921-8600 (800) 473-6743	V.32/14.4M	300 - 14.4K	12K	Yes	Both	Full duplex	Dial-up/2-wire, leased-line/2-wire, leased-line/4-wire	Point-to-point	Bell 103, Bell 208, Bell 212, V.21, V.22, V.22 bis, V.23, V.32, V.32 bis, V.33	V.42, MNP levels 1-4	V.42 bis, MNP level 5	Yes	Yes	Password, callback, automatic security handshake	Stand-alone, rack mount	2.5 by 9.7 by 10.1/2.2	\$1,695
	OmniMod 14.4	14.4K	12K	Yes	Both	Both	Leased-line/4-wire	Point-to-point	Proprietary	Trellis coding	None	Yes	No	Password, integral encryption	Stand-alone, rack mount	3.5 by 17.5 by 15.5/16	\$3,645
Racal-Milgo (305) 846-1801, (904) 723-2555	OmniMod 14.4 FP	9.6K - 14.4K	12K, 9.6K	Yes	Both	Both	Leased-line/4-wire	Point-to-point, multipoint	Proprietary	Trellis coding	None	Yes	No	Password	Stand-alone, rack mount	3.5 by 17.5 by 15.5/16	\$3,685
	OmniMod V.33	14.4K	12K	Yes	Synchronous	Both	Leased-line/4-wire	Point-to-point	V.33	Trellis coding	None	Yes	No	Password, integral encryption	Stand-alone, rack mount	3.5 by 17.5 by 15.5/16	\$3,645
	RMD 3222, RMD 3264	300 - 14.4K	12K - 4.8K	No	Both	Both	Dial-up/2-wire, leased-line/2-wire, leased-line/4-wire	Point-to-point, multipoint	Bell 103, Bell 208 A/B, Bell 212A, V.21, V.22, V.22 bis, V.23, V.32, V.32 extended, V.33	MNP levels 2-5	MNP level 5	Yes	Yes	Password, callback, pass through	Stand-alone, rack mount	2.5 by 9.7 by 10.1/6	\$1,595 (RMD 3222), \$2,495 (RMD 3264)
	RM-1433	14.4K	12K	Yes	Both	Both	Leased-line/4-wire	Point-to-point	V.33	Trellis coding	None	No	No	Password, integral encryption	Stand-alone, rack mount	3.5 by 17.5 by 15.5/16	\$3,150
	9642PA	300 - 14.4K	12K, 9.6K, 4.8K	No	Both	Full duplex	Dial-up/2-wire, leased-line/2-wire, leased-line/4-wire	Point-to-point, multipoint	V.32, proprietary V.33 extended, V.33	V.42, MNP levels 2-4	V.42 bis, MNP level 5	Yes	Yes	Password, callback, transparent security handshake	Stand-alone	2.5 by 9.7 by 10.1/5	\$1,595
Racal-Vadic (408) 432-8098, (800) 482-3427	VA9642E	300 - 14.4K	12K, 9.6K, 4.8K	No	Both	Full duplex	Dial-up/2-wire, leased-line/2-wire, leased-line/4-wire	Point-to-point	V.32, proprietary V.33 extended, V.33	V.42, MNP levels 2-4	V.42 bis, MNP level 5	Yes	Yes	Password, transparent security handshake, optional VAS30 security system	Rack mount, dual modem card	7.1 by 6.8 by 15/1.5	\$2,495 (two modems)
	TC 1806	4.8K - 14.4K	9.6K, 7.2K, 4.8K	No	Synchronous	Full duplex	Leased-line/4-wire	Point-to-point, tail circuit	V.29	Trellis coding	None	No	No	None	Stand-alone, rack mount	9 by 8.25 by 13.25/4	\$1,945
UDS Motorola (205) 430-8000	1450	9.6K, 12K, 14.4K	9.6K	No	Both	Both	Dial-up/2-wire, leased-line/2-wire, leased-line/4-wire	Point-to-point	V.29, V.33	None	None	No	Yes	Front-panel lockout	Stand-alone, rack mount	7 by 9.6 by 2.25/5	\$2,195 (1-9 modems), \$2,085 (10-24 modems), \$1,975 (25-49 modems)
U.S. Robotics, Inc. (708) 982-5001, (800) 343-5877	Courier HST	300 - 14.4K	12K, 9.6K, 7.2K, 4.8K, 2,400, 1,200, 300	Yes	Asynchronous	Full duplex	Dial-up/2-wire, leased-line/2-wire, leased-line/4-wire (with converter)	Point-to-point	Proprietary HST mode	V.42, MNP levels 2-4	V.42 bis, MNP level 5	No	Yes	None	Internal, stand-alone, rack mount	1.57 by 8.3 by 12.65/4 (stand-alone), \$895 (internal)	\$895 (stand-alone, rack), \$895 (internal)
	Courier V.32 bis	300 - 14.4K	12K, 9.6K, 7.2K, 4.8K, 2,400, 1,200, 300	Yes	Both	Full duplex	Dial-up/2-wire, leased-line/2-wire, leased-line/4-wire (with converter)	Point-to-point	V.32, V.32 bis	V.42, MNP levels 2-4	V.42 bis, MNP level 5	No	Yes	None	Internal, stand-alone, rack mount	1.57 by 8.3 by 12.65/4 (stand-alone), \$895 (internal)	\$895 (stand-alone, rack), \$895 (internal)
	Courier HST Dual Standard with V.32 bis	300 - 14.4K	12K, 9.6K, 7.2K, 4.8K, 2,400, 1,200, 300	Yes	Both	Full duplex	Dial-up/2-wire, leased-line/2-wire, leased-line/4-wire (with converter)	Point-to-point	V.32, V.32 bis	V.42, MNP levels 2-4	V.42 bis, MNP level 5	No	Yes	None	Internal, stand-alone, rack mount	1.57 by 8.3 by 12.65/4 (stand-alone), \$1,249 (internal)	\$1,295 (stand-alone, rack), \$1,249 (internal)

IN DEPTH

Visualizing information planning

Three strategic techniques that rely on graphics, not jargon

BY BOB CURTICE AND
DAVE STRINGER

Has this ever happened to you? You're in a planning meeting with top business managers to brief them on the impact technology can have on the business. Your technical explanations are clear (after all, the information systems staff understood them). These same descriptions, however, are now being met with blank stares. You're frustrated, the executives are confused, and your plans for a new manufacturing system are looking dim.

Your effort is not at fault here; the way you package it is. How can you make clear to non-technical managers the effect IS technology can have on a firm? We're proposing strategic planning techniques that graphically show how information can impact an organization.

There are lots of planning methodologies out there. Typical ones get down to the gory details of functions and data and systems — important parts of technology planning, to be sure. But they only scratch the surface. While these methods get business managers involved in IS planning, they don't help them understand it.

Curtice is vice president at Arthur D. Little, Inc. (ADL), a consulting company in Cambridge, Mass. Stringer is director of ADL in London.

Here's where IS chiefs can help. Technology managers can provide a big-picture view from which business executives can make informed decisions about future investments. Business managers are given the wherewithal to track, revise, shape and get up to their elbows in information technology planning.

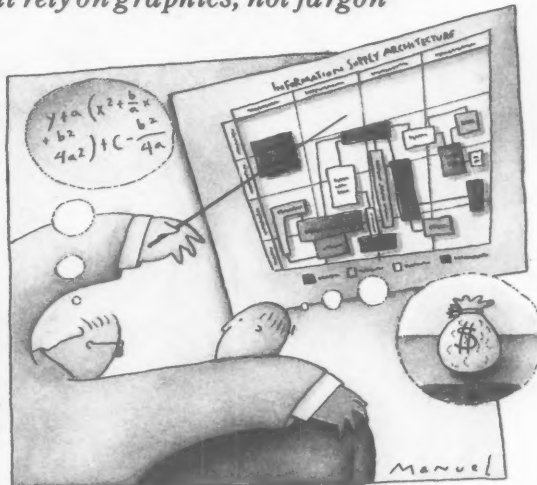
Layouts at a glance

The most effective strategic planning methodologies should provide comprehensive, graphical layouts of an organization's array of information at a glance. They should not only show where information is generated and needed by internal and external customers, suppliers, regulators and so on, but they should also depict where bottlenecks and opportunities exist.

The following are three such graphical planning methods:

■ **The information supply and demand matrix.** While other methodologies follow organizational boundaries, the information demand and supply matrix analyzes a business' information needs by function. This technique also points out how well IS is meeting those needs.

The information supply and demand chart pictured below represents the needs of a fictitious large manufacturing company, called Acme Manufacturing Co., but can be tailored to fit



Manuel King

your organization.

The chart is structured as a matrix, with rows and columns. The columns should represent the six to 12 activities or high-level functions that collectively describe the processes of your business. For Acme Manufacturing, those functions include developing products and processes and managing finances.

There are always four rows in the matrix, characterizing the levels of management responsibility involved:

• **Strategic functional level.** Functions performed at this level are fundamental to the long-term performance and survival

of the business and are integral to developing strategies and objectives as well as establishing new business directions. Examples for Acme include setting new product directions and long-term financing as well as developing marketing strategies.

• **Planning and analysis functional level.** Functions here establish how the company will meet long-term objectives as well as analyze internal and external events to determine their impact on achieving strategic goals.

• **Control and monitoring functional level.** Functions at this level ensure that the day-to-day business is carried out properly,

Information supply-and-demand matrix for Acme Manufacturing Co.

A technique for showing what the information needs of the business are by function and how well those needs are being met

	Develop products and processes	Produce products	Manage material	Market products and services	Manage finances
Strategic	Set new product directions Social/economic trends Technology forecast		Determine sourcing strategy	Develop new product strategy Develop marketing strategy	Set long-term financing strategy Economic forecasts Long-term financing plans
Planning and analysis	Analyze new product opportunities Analyze new technology	Plan production schedule Analyze production problems	Qualify new suppliers Negotiate supplier contracts Plan material requirements Plan distribution requirements Set stock levels	Determine market segments Construct annual marketing plan Set product prices Forecast demand Plan advertising and promotions	Prepare budgets Analyze product costs
Control and monitor	Control development projects	Monitor production schedule Control production quality	Monitor distribution performance Control product quality Monitor supplier performance	Monitor marketing plan Report sales	Monitor budgets Control foreign exchange exposure
Operational	Specify new products Specify product process	Issue production work orders Manufacture products	Process purchase requisitions Process purchase orders Receive material Ship material	Conduct market research Administer promotions Arrange advertisements	Collect receivables Prepare financial statements

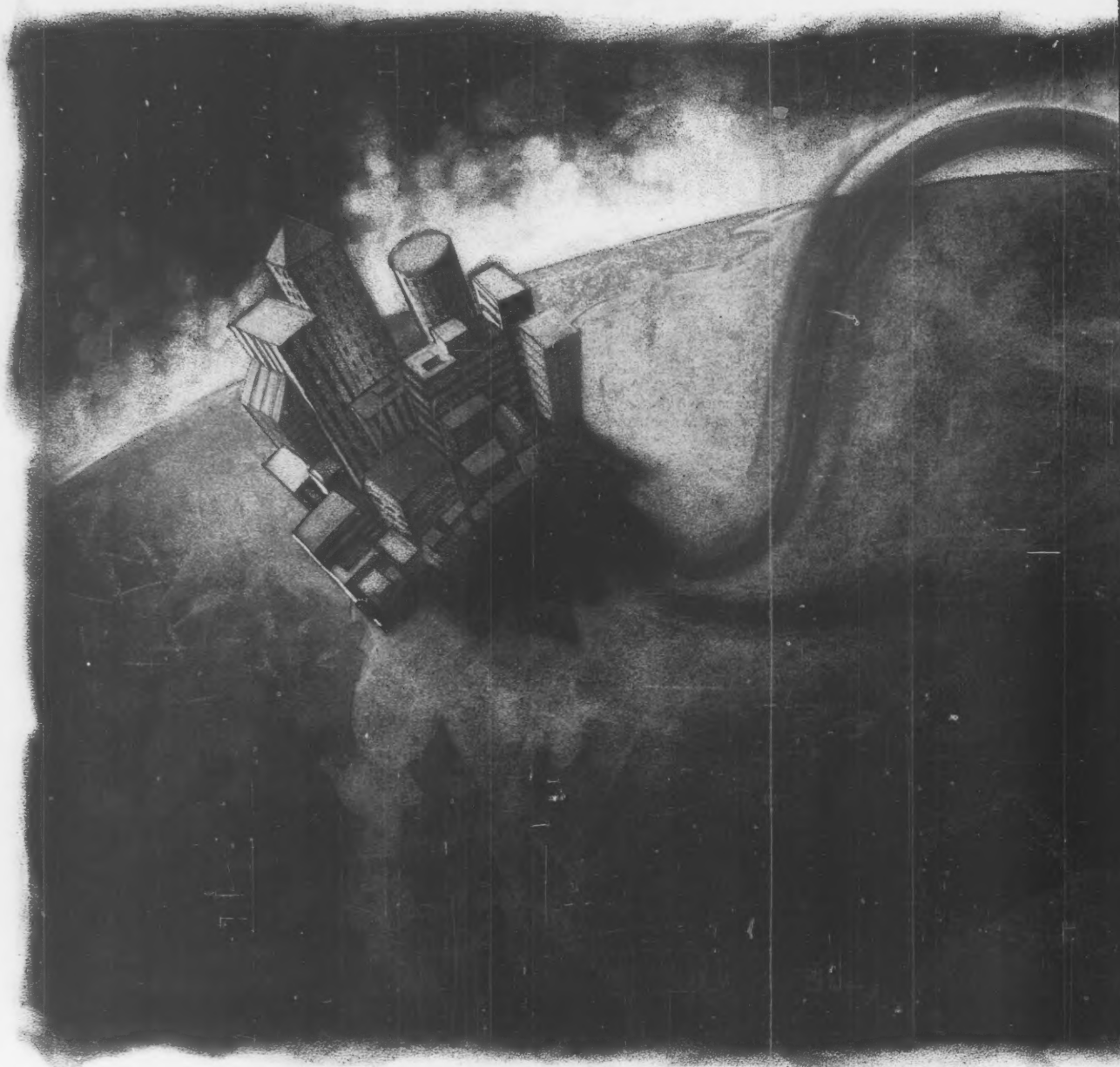
Information is adequately supplied to the business function (not necessarily by computer)

Information is supplied but not adequately (inaccurate, late, incomplete or not usable)

Information is not supplied

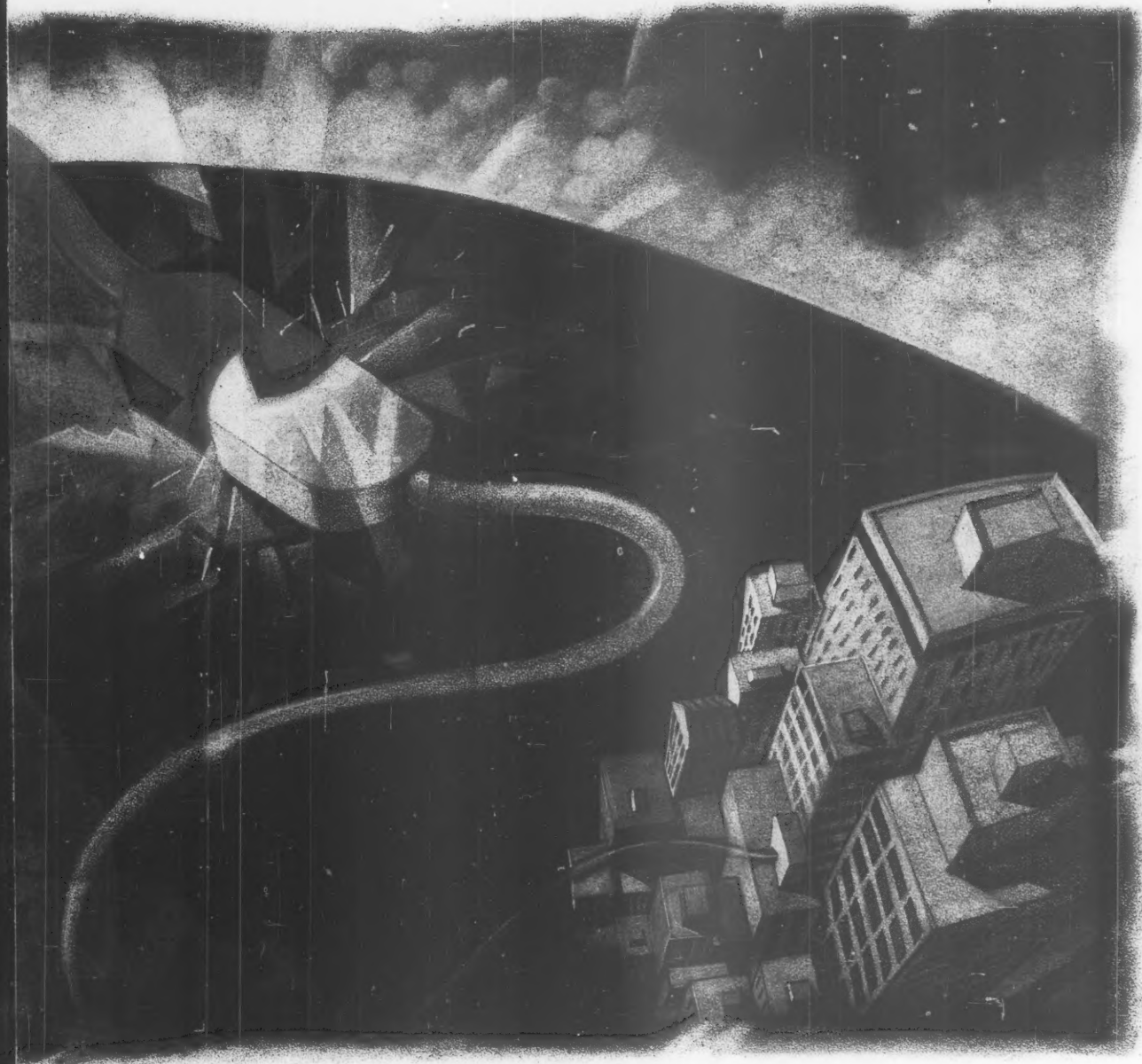
Source: Arthur D. Little, Inc.

CW Chart: Marie Haines



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efficiently and in line with plans.

• Operational functional level. Functions here execute the day-to-day routine transactions and activities that make up the business.

Nowhere on this chart is there a "managing information" function; managing information is something that occurs throughout the matrix (and organization).

Clearly, each level in the chart implies the need for different kinds of information technology support. Acme's technical and business management staff may find that there are many transaction-heavy on-line functions going on at the operational level. Therefore, an on-line transaction processing system may be appropriate here. Decision-support software, spreadsheets and the like may be the right fit at the strategic level in which there are fewer users and more universal needs.

Moreover, graphically showing these levels encourages company executives to identify functions that are overlooked in other technology planning processes. For example, there may not be any activities identified at the strategic level having to do with managing people. Such critical observations force business and technology managers into in-depth discussions of what appears in the chart.

Three-part instruction

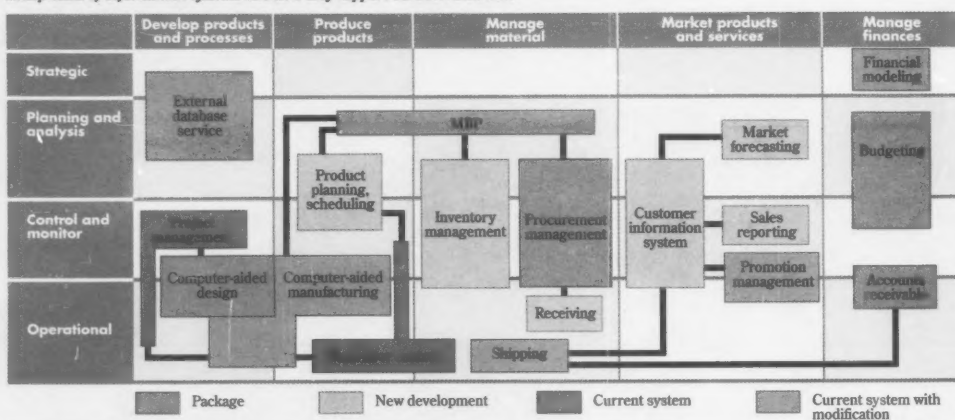
Each cell of the matrix has three pieces of information. First, it contains a list of the specific activities needed to perform all business functions; such a list appears at each functional level. In our example, in the planning and analysis category of the market products and services column, there is a list of activities such as determining market segments, constructing annual marketing plans and setting product prices.

Second, for each of these business activities, the matrix lists the information needed to carry it out effectively.

In this methodology, information needs are ascertained by an analysis of objectives, critical success factors, performance measures and knowledge of modern business practices. Other methodolo-

Information supply architecture for Acme Manufacturing Co.

A depiction of information systems and how they support business activities



Source: Arthur D. Little

gies start with an analysis of the information and technologies users say they need. This analysis starts with the functions users perform, which in turn suggests to management the kind of information that's needed to do a better job.

For Acme Manufacturing, information needed to forecast demand includes customer orders by product, quantity and due date; marketing plans; historic demand forecasts; and planned promotions.

Thirdly, color coding is used to indicate how well information is currently supplied to each business activity.

Here, on a single chart, is a comprehensive picture of this business' activities, the information it requires and an assessment of how well that information is being supplied today. It serves as a basis for both management and IS to understand where problems with the quality and availability of information exist.

■ **The value matrix.** Strategic planning can also be done from a value perspective. The value matrix, set up like the

matrix described above, shows senior managers where IS investments are likely to impact overall business strategy.

In the value matrix, planners assign a score to each cell. This score represents the value that the functions in that cell contribute to the firm's strategic business objectives. Thus, if a company's strategic objective is to improve its level of customer service, then cells with functions that concentrate on the operational aspects of logistics/materials management or the planning aspects of selling will receive a high value score.

One way to simplify the process is by using color to assign values to the cells. Different colors can indicate high value, average value or less than average value to the business.

The assessment of information quality (using the supply and demand matrix), combined with the value of business functions to strategic objectives (given by the value matrix), enable management to focus attention and priorities on those busi-

ness areas that not only are needy but can also offer strategic benefits.

■ **The information supply architecture matrix.** Many managers have little grasp of the scope of systems, what business functions they support, how they interrelate or overlap and how newly developed systems fit into this picture.

The information supply architecture matrix (see chart page above) is intended to provide non-IS managers with this panorama. It uses a matrix with the same columns and rows delineated above, with each application system mapped out as a polygon. Each polygon overlaps cells containing functions supported by the application. One application may span many cells, and a cell may contain multiple applications. Connecting lines can be drawn between polygons to signify major interfaces between systems.

The information supply architecture is often prepared in two versions. One version depicts the current investment in applications, usually showing duplicate systems supporting functions and cells that have little or no systems support. The second version portrays a more planned state of affairs. Color coding can clue executives into the status of each application; it can tell whether the application is part of the current system, a new development, a modification and so on.

Such graphical portrayals of the IS environment form a clear and comprehensive picture without the need for technical jargon. Acme Manufacturing is not the only firm to capitalize on this kind of strategic planning methodology; real-life firms have made it work for them.

For example, following the use of such a graphical technique at the United Distillers Division of Guinness PLC in the UK, the company restructured the processing of 70,000 yearly export orders. Information now flows to a single customer administration executive, who handles all the activities involved in getting the goods to the customer. Benefits include lower order-processing costs, improved cash flow, enhanced customer service and growing market share.

Understanding, when communicated with pictures, enables executives and operating management to provide focus to the information management agenda. That's the kind of leadership and understanding IS needs if it wants to capitalize on today's information technology. ■

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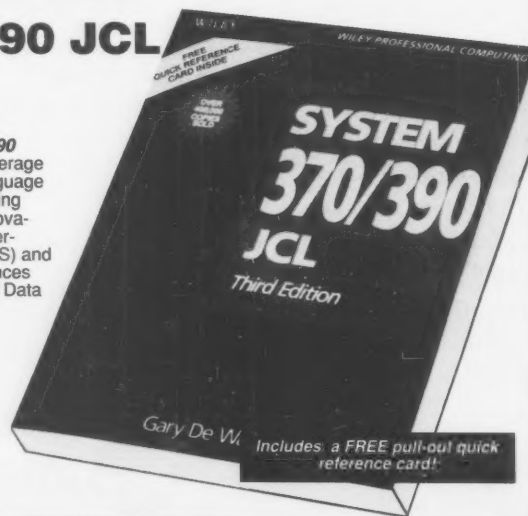
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COMPUTER INDUSTRY

NATIONAL BRIEFS

Numero uno in El Segundo
Industry veteran **Peter Tierney**, who started out at IBM and went on to occupy the top slots in marketing at database vendor **Ingres Corp.** (then known as Relational Technology, Inc.) and at rival **Oracle Systems Corp.**, last week took the helm at El Segundo, Calif.-based expert systems firm **Inference Corp.** As president and chief executive officer, Tierney replaces Inference co-founder **Alex Jacobson**, who will remain as chairman of the board and manage the company's international operations.

AT&T buys into Sun, Part 3
Sun Microsystems, Inc. is about to sell 491,755 shares of newly issued stock to longtime partner **AT&T** for approximately \$13.7 million. The transaction, which completes the third and last leg of a three-year deal entered into by Sun and AT&T in January 1988, will give the telecommunications firm an estimated 15% stake in the workstation vendor. The agreement also allows AT&T to increase its Sun ownership to 20% through open-market purchases.

Two into one will go

San Jose, Calif.-based disk drive player **Maxtor Corp.** last week drew its Maxtor Colorado operation (formerly **Miniscribe**) further into the California headquarters' fold. **Taroon Kamdar**, who has headed up Maxtor Colorado since its inception, will continue in that role, adding the newly created title of president and chief operating officer/Disk Drive Operations. As such, Kamdar will oversee Maxtor's information systems, operations, worldwide sales, product management and materials and engineering divisions.

Still Blue, but bigger

The third-party computer leasing sector last week continued to make prophets out of industry observers who see the near-future leasing market marked by increased offensive and defensive consolidation. Deerfield, Ill.-based **Meridian Leasing Corp.** scooped up the assets of Eden Prairie, Minn.-based **Dataserv Equipment, Inc.** According to Meridian, the acquisition adds some \$100 million worth of assets — including IBM banking equipment — to a portfolio colored Big Blue and valued at \$2.5 billion.

Intel anticipates 'biggest year ever'

BY MAURA J. HARRINGTON
CW STAFF

SANTA CLARA, Calif. — Recession? No recession here!

That is the underlying message from Intel Corp. Chief Executive Officer Andrew Grove, who recently told *Computerworld* that while the company is tightening up to prepare for the recession spreading rapidly throughout the U.S., 1991 is going to be Intel's "biggest year ever."



Intel's Grove betting on success

Analysts concurred. "Intel will probably be the fastest growing semiconductor company of its size," in 1991, said Drew Peck, an analyst at Donaldson, Lufkin & Jenrette, Inc.

John Gorton, vice president of research at Van Kasper & Co., a San Francisco investment brokerage firm, said he expects Intel to grow 15% to approximately \$4.5 billion in sales this year.

How will Intel be able to grow so much while other companies predict they will have to struggle just to keep from going under? "Focus" and "risk" are the two words Grove used to describe the firm's strategy.

"For the past several months, we have tried to slow down growth of the 'business-as-usual' kind in preparation for the recession," he said. Now the company is poised for capital expansion.

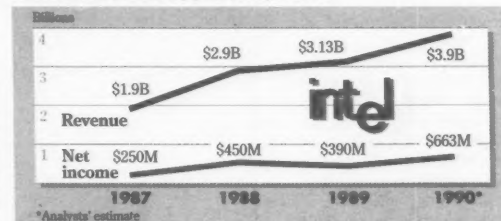
In 1991, Grove said, Intel will center its attention on developing new products for the notebook and laptop computer markets — now the fastest growing

segments of the microcomputer industry, according to analysts. Framingham, Mass.-based market research firm International Data Corp. estimates the total portable personal computer market will be approximately \$3.9 billion by the end of this year and will grow to \$5.2 billion by 1993.

"What we are pondering is mass production of connectivity solutions that can be installed as easily as a software disk," Grove said. Toward that goal, he said, Intel is currently developing the following products:

Against all odds

Recession notwithstanding, Intel — and analysts who follow the firm — believes that it will bloom, if not boom, in 1991.



Source: Intel Corp.

CW Chart: Paul Mock

- A network connectivity card for notebook computers that fits into a slot similar to a memory flash-card slot, allowing the computer to act as a wireless node on a network.
- A communications card or chip that could bring added communications capabilities such as online teleconferencing to the computer.
- The expansion of the I486

microprocessor product line, aimed at bringing the high-end chip to an affordable level and shrinking it so that it will better fit in a PC.

Rosy expectations notwithstanding, however, Intel has a couple of thorns in its side. Sunnyvale, Calif.-based Advanced Micro Devices, Inc. (AMD), which has been wrapped up in

Continued on page 70

U.S. semiconductor firms show gains

BY MAURA J. HARRINGTON
CW STAFF

SAN JOSE, Calif. — For the first time in more than a decade, U.S. semiconductor companies posted a gain in the worldwide semiconductor market, jumping 1.6% to a 36.5% total market share, according to a recent report by market research firm Dataquest, Inc.

The gain for U.S. companies was partially a result of the sales of Metal Oxide on Silicon (MOS) microprocessors, which are produced by some of the larger semiconductor companies, including Motorola, Inc. and Intel Corp.

The survey, which analyzed 155 semiconductor companies worldwide and ranked them in

order of worldwide market share, showed that U.S. companies also did well on their own, with Intel in fifth place, up from last year's worldwide rank of eighth.

Motorola, which was ranked No. 4 in the survey, posted an 11% worldwide gain and now holds 6.7% of the semiconductor market, the survey revealed.

Worldwide growth

On the whole, the worldwide semiconductor industry grew 2% between 1989 and 1990 and became a \$58.4 billion industry. The increase was attributed to the 23% growth last year in the MOS microcomponent market, the report said.

However, Jerry Banks, Dataquest's director of the Semicon-

ductor Group, said the MOS memories market — which includes static random-access memory and dynamic random-access memory (DRAM) chips — fell by 17% in 1990. Within the MOS memories category, DRAM chips fell 32% last year, he added.

"The companies that were strongly positioned in DRAMs were the ones that were hurt the most," Banks said, adding that Texas Instruments, Inc. was among those companies, losing 8% of its worldwide semiconductor market share to hold 4.4%.

Other companies that were hurt by the failing DRAM market included NEC Technologies Corp., Toshiba Corp., Hitachi Ltd. and Oki Corp., all based in Japan.

Unisys adds to sales force with resellers

BY JEAN S. BOZMAN
CW STAFF

SAN JOSE, Calif. — "Focus" is the theme of Unisys Corp.'s Computer Systems Products Group (CSPG), according to CSPG President Cyril J. Yansouni, who has responsibility for managing 20,000 of the firm's 70,000 employees.

Yansouni, 48, who moved into Unisys' top tier of management in May 1990, said he believes the firm must put its resources where they will deliver maximum benefit, or it will con-

tinue to falter. So even as the \$10 billion company struggles to recover from a third-quarter loss of \$356.8 million and a massive layoff of 5,000 employees (CW, Oct. 29, 1990), he plans to add new sales personnel.

"We're adding more soldiers to the army," Yansouni said. But the additions, which Yansouni would not quantify, are going to come in specific areas in which Unisys machines have sold well.

"We're going to come knocking on your door if you're a bank or an insurance company or an airline or a communications com-

pany," Yansouni said. "But if you're a small business that just wants to buy a computer, maybe one of our value-added resellers will come to see you."

That does not mean Unisys is ignoring its thousands of smaller user sites. By allowing VARs to sell into such sites, however, Unisys will be able to reduce its overall direct-sales overhead, Yansouni said. Unisys will continue to write its own off-the-shelf applications, however, particularly in the areas of imaging and financial and airline pro-

Continued on page 69



Unisys' Yansouni focuses on gaining maximum benefits

INTERNATIONAL
BRIEFS

Out here on our own

The International CASE User's Group, founded three years ago by Bellevue, Wash., market research and consulting firm CASE Research Corp. to provide a vendor-blind educational forum for users trying to come to terms with the ways and means of computer-aided software engineering, started the new year on a new footing: independence. Started with an experimental Washington chapter in 1988, the group now boasts official status as an independent, nonprofit organization with approximately 9,000 members in 18 chapters in the U.S., Canada, Europe and Asia, with another 12 chapters being formed.

Not guilty

The proliferation of lawsuits that is by now a familiar feature of the U.S. computer industry could be spreading offshore. Witness last week's report from the UK that **The Halifax Building Society** was recently cleared of alleged data protection breaches. The society, which had been charged with contravening the UK's Data Protection Act by misusing personal information about its customers, was awarded \$95,325 to cover costs. Summing up at the end of the five-day hearing, a Leeds Crown Court justice called the case "complete nonsense."

Rest in peace

More than 450 UK computer dealers went out of business during the first nine months of 1990, according to a study released by UK market research firm Romtec. However, Romtec indicated that it appears as though the number may have peaked. Although 281 dealers failed or were taken over between April and June, the number dropped to 78 between July and September.

Back to square one

Criticizing Netherlands-based NV Philips, France's Groupe Bull and Italy's Ing. C. Olivetti & Co. on its recent massive job cuts, the **European Parliament** has called on each firm to suspend and rethink its restructuring plans. The Parliament resolution said the three vendors, each of which has trimmed thousands of jobs, failed to achieve global restructuring plans and relied too heavily on the elimination of redundancies. Union negotiations should have been carried out on an international basis, with management information available throughout Europe, the resolution said.

Spain set to follow X/Open strategy

BY TERESA VALDEPERAS
SPECIAL TO CW

MADRID — The Spanish government has formally adopted X/Open — considered to be one of the most practical and viable ways to promote an open systems strategy — as its future

purchasing strategy.

Consequently, the Spanish government is expected to make a transition from existing proprietary systems to open systems. At a recent meeting, Spain's Information Technology Council adopted the X/Open Transportability Guide for future multiuser

system purchases made by the administration. Government support of Open Systems Interconnect/International Standards Organization communications rules was also adopted.

According to a recent market research study, Unix system purchases by the Spanish gov-

ernment increased significantly last year. The decision to go with an open systems policy puts Spain in accord with Germany, which adopted the open systems strategy in January 1990, and with the UK, which charted that path for itself in December 1989.

Valdeperas writes for PC World Espana, an IDG publication based in Spain.

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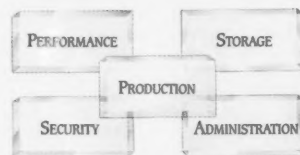
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Unisys

FROM PAGE 67

cessing. "You can bet that we're not getting into any new business that isn't making money," Yansouni said.

In terms of products, Unisys has adopted the Integrated Information Environment architecture — a mixed-vendor, or

open systems, strategy announced last year. Initially, executives were concerned that longtime Unisys users would be wary of such a nonproprietary stance. However, "We concluded that we were in danger of losing more customers without the open systems strategy," Yansouni said, "and all of those customers were vital ones."

Customers such as Pacific

Bell, US West and Air France were already well on their way to a mixed-vendor environment when Unisys decided to push open systems solutions. "If you're trying to resist this idea [of open systems]," Yansouni said, "the genie's been out of the bottle for a long time." Also, unlike IBM, Unisys is hardly in the position of "dictating the architecture for customers," he said.

Marketing will push forward on a global basis, with emphasis on European and Pacific Rim accounts, including sites in Japan. Demand is there, Yansouni believes, citing a major Japanese company's resale of Unisys equipment as a \$2 billion business for that Japanese firm. And even though Unisys' U.S. sales proved disappointing in 1990, Yansouni said he and Unisys

Chief Executive Officer James Unruh "aren't losing any sleep over it. The only thing we can do is to put this company back in shape as quickly as we can."

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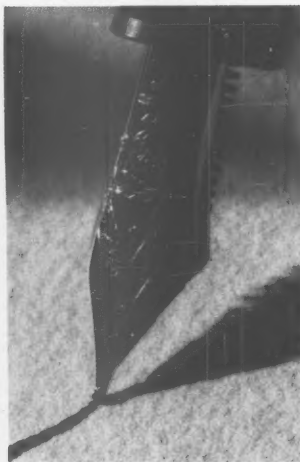
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NCR exec takes over

BLUE BELL, Pa. — To lead its open systems charge, Unisys turned to former NCR Corp. executive Hugh Lynch, who was appointed senior vice president of the firm's Computer Systems Product Group last month.

Lynch, 56, was vice president and general manager for development and production at NCR's general-purpose systems division. During that stint, he helped develop NCR's Open Cooperative Computing Architecture, which was announced last year.

Lynch took early retirement and left the Dayton, Ohio-based computer company one year ago. "I'd been in the same central product job for 10 years," he said. "It was very much a personal decision." In 1982, Lynch's group brought forth the Unix-based Tower, NCR's first open systems product.

Lynch has a big job ahead of him at Unisys. He must coordinate open systems approaches across the computer company's fractured product line, which includes proprietary mainframes, Unix services, personal computers and networked workstations.

In addition, he will "look at the application of open systems and how to position those relative to other products," he said.

An open systems approach, Lynch conceded, can bring lower margins to an old-guard vendor that does little more than produce a commodity product.

"But there's nothing about the notion of open systems that keeps you from building a technically superior architecture," he added.

Lynch, who has been at Unisys since November, will take responsibility for all open systems programs and will serve as a deputy to Computer Systems Products Group President Cyril J. Yansouni.

ELLIS BOOKER

Intel

CONTINUED FROM PAGE 67

several ongoing intellectual property rights lawsuits with Intel, will most certainly take at least a small bite from Intel's monopolistic control of the 80386 chip market.

However, Intel's latest marketing strategy may prevent AMD's gains from hurting it, according to Grove. While he said he expects Intel's low-end 386 chip, the 16-bit 80386SX, to be its best-selling chip this year, the firm's higher-level 32-bit 386 chip, the 386DX, could be overshadowed by the company's plans to build less-expensive models of its highest level microchip to date, the 486.

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"What we are doing is proliferating the 486 product line," Grove said. "Over the course of 1991, we are going to move both upward in terms of performance and downward in terms of price and performance."

Millard Phelps, an analyst at Hambrecht & Quist, Inc., said that a low-end 486 chip, similar to the 386SX chip in concept, is just what Intel needs to get the

high-end chip off the ground. However, Phelps said, such a chip is probably at least a year away from volume production.

If the "focus" element of the firm's risk-and-focus strategy involves increased emphasis on the microprocessor market, Grove said, the "risk" side includes cutting back on projects unrelated to that market. He declined to specify

which research and development efforts might be canceled. However, Intel recently halted a project in which it was exploring the possibility of developing its own Unix workstation. That project was axed, Grove said, because the market was too small and the workstations too costly to produce, compared with the volume production of its microprocessor-based products.

Not all analysts agree that such a focus is wise for Intel. Peck said it is dangerous and must be carefully monitored. "I generally regard Intel's focus as a negative, because if they ever stumble, that could hurt them," he said. "If I were Intel, I would be moving faster into the communications area," Peck said.

Indeed, that is exactly Intel's idea, according to Grove. Cutting back on the Unix workstation project and others, he said, will make more money available to complete two fabrication plants under development in Albuquerque, N.M.

Once completed, the plants will be used for volume production of notebook computer peripheral products, such as networking and communications cards for the small machines.

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1991 AGENDA

Industry Agenda: 1991

Axel Leblais, Chairman and CEO, IDC

1991 U.S. IT Spending Outlook

David C. Moschella, Sr. V.P., Worldwide Research, IDC

The Shifting Fortunes of the Networking Industry

Kim Myhre, Sr. V.P., Worldwide Consulting, IDC

The Restructuring of the Computer Industry

Panel Discussion, Chaired by David P. Vellante, V.P., Systems Research, IDC

Perestroika Comes to the Data Center: IBM and the MIS Revolt of the 90's

Frank Gens, V.P., Technology Assessment, Technology Investment Strategies Corp.

Managing Channels for Growth

Lee M. Levitt, Dir., Distribution Channels Research, IDC

Workstation Evolution: Up or Down

Vicki J. Brown, V.P., Systems Research, IDC

The 1991 PC Market: Which Way Will Pay?

Aaron Goldberg, V.P., Desktop Computing Research, IDC

If you need to know how and why the computer industry is changing, don't miss the IDC Computer Industry Briefing Session.

EXECUTIVE CORNER

Goodman leaves Bytex Corp. post

Jeffrey Goodman last week resigned his post as president and chief executive officer of Southborough, Mass.-based Bytex Corp. to take on the same title at another firm. Goodman, who came to Bytex in 1988 after serving as CEO at Software International, Inc. after that firm's purchase by Computer Associates International, Inc., spearheaded the matrix-switch vendor through more than 100% growth and an initial public offering. Goodman is succeeded by industry veteran and Stardent Computer, Inc. co-founder Arthur Carr, who will serve as a consultant to the board and acting president during the search for a permanent successor.

David G. Hargraves is the new chief financial officer at San Antonio-based Datapoint Corp. Prior to arriving at Datapoint in 1981, Hargraves — who will have overall fiscal responsibility for the company — spent nine years in corporate accounting at NCR Technologies, Inc., where he rose to become manager of international accounting.

Just in time for the onset of tax season, Kent, Ohio-based accounting software company Cpaid has a new president and chief executive officer: John H. Graves, formerly director of technical services at the American Institute of Certified Public Accountants (AICPA). Prior to his work at the AICPA, Graves served as president of Graves & Graves, PC, a CPA firm in Decatur, Ill.

Paul Folino took over earlier this month as president and chief operating officer at Thomas-Conrad Corp., an Austin, Texas-based network products and services vendor. Folino, who formerly held the post of general manager at Xerox Corp.'s Office Systems Division, joined Thomas-Conrad last year as managing director at its European subsidiary.

A

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LIFE AFTER LAYOFFS

This is Part 1 of a three-part series tracking IS professionals' attempts to recover from job losses.

BY ALAN J. RYAN
CW STAFF

When Carlos Guerrero lost his programming job, he expected to land a new position without too much difficulty. After all, he had nearly 20 years of experience and had never run into problems landing a job in the past.

But things are different now. Like many of his peers, Guerrero has been forced to pound the pavement for a year looking for scarce positions and facing stiff competition.

Welcome to job hunting in 1991.

It wasn't as if Guerrero was unprepared for his layoff from Morse Shoe, Inc. in Canton, Mass. Like many workers facing a similar situation, he had seen the signs of the impending layoffs. Since he had been with the company for only a year, he figured he'd be among the first to be let go. By the time the ax actually fell, Guerrero had already begun his search for a new job.

However, his job hunt has been anything but easy. In 1990, he was granted only a handful of job interviews, despite the fact that he sent dozens of resumes and cover letters to prospective employers each month.

A struggling economy in the Northeast and many other parts

of the country has brought with it layoffs in many sectors — from financial services to manufacturing.

Newspaper and magazine employment for programmers is answered by fierce competition for any openings, Guerrero says. At some of his interviews, Guerrero was told there were 30 or 40 candidates for the position, and the same position a year or two earlier would have drawn only three or four resumes.

"It is frustrating," he says. With a large pool of candidates for every job, Guerrero says, companies are asking for more experience than they used to because it is an easy way to narrow down the field.

Experience needed

"There is a qualitative change in the people that were laid off. Now, maybe because of the maturity of the computer industry, there are many people with 10 to 20 years of experience, and many of those people are out of work," Guerrero says. In turn, many of the highly qualified workers, frustrated by the same situation facing Guerrero, are accepting jobs below their qualifications.

Guerrero admits that his own experience — with heavy concentration in the shrinking Burroughs Corp. field — has not helped him find a job. He says he feels some resentment toward Morse Shoe because the company had brought him in and enrolled him in a training program to learn the IBM DOS operating system, only to eliminate his job halfway through the two-year program. "I had taken a course on VM/CMS [prior to Morse

Shoe] but didn't have any hands-on experience, so they put me on the training track."

Morse Shoe made a decision to move to the IBM OS operating system, and the firm said it would take too long to train Guerrero, he says. So halfway through the program, "they hired people who already had a few years of experience with OS," he says.

training and is prepared to take a lower-level job at a smaller company and at a lower salary if it is what he must do to become proficient in the IBM environment.

To that end, Guerrero visited a career consultant who helped him devise a strategy. He improved his cover-letter writing and learned how to construct a resume highlighting his most positive career experiences.



After being laid off, Guerrero faces the fact that he might have to take a lower level job. But he remains upbeat: "I know I'm competent."

Though he feels that with the OS training, he could have been an asset to the company for years to come, economics prevailed, and Guerrero was out on the street.

Guerrero lists his job strengths as two years doing project management, the ability to develop application software for accounting and payroll and an interest in programming standards, programming methods and logic software.

Now, Guerrero says, he is anxious to complete his IBM

Next, he began working with several employment agencies.

Though Guerrero has been mailing out five to 10 resumes per week for nearly a year, the response rate is low. "In most cases, they don't even send a 'Dear John' letter," he says.

For the 42-year-old Guerrero, a native of South America, the information systems field has been a way of life since 1971, when he got his start as a programmer in Caracas, Venezuela. Today, after working in the Boston area for 10 years, he finds himself facing the

possibility of relocating and/or making a career alteration.

"I am convinced that I took the wrong career path; only now it is too late for me to start another career. So I just have to keep going," he says.

Some options he is considering include consulting, writing articles and books on IS-related topics, teaching programming or selling computer hardware and software. He has also been answering job-wanted ads in *The New York Times*, but he says jobs in the New York area are scarce, too.

Life has changed

After a year of struggling, Guerrero admits that his loss of income has left him with a very changed lifestyle in which it is sometimes difficult to make ends meet. Fortunately, his wife's salary helps pay the bills, and he has landed some free-lance work doing translations because he speaks fluent Spanish. He has also started writing a book on programming logic that he expects to finish this year.

Guerrero's daily life has become a routine of writing his book, reading want ads, constructing cover letters and mailing resumes. This month, he says, he will increase his output of resumes to 15 to 20 per week by sending companies blind inquiries.

Guerrero says the one thing that has remained constant during these trying times is his faith in himself. "I know I'm competent," he says.

Sooner or later, he says, he'll land a job. "But I also know that it is going to be difficult while the present economic condition prevails. It is a matter of luck."

Ryan is a *Computerworld* features senior writer.

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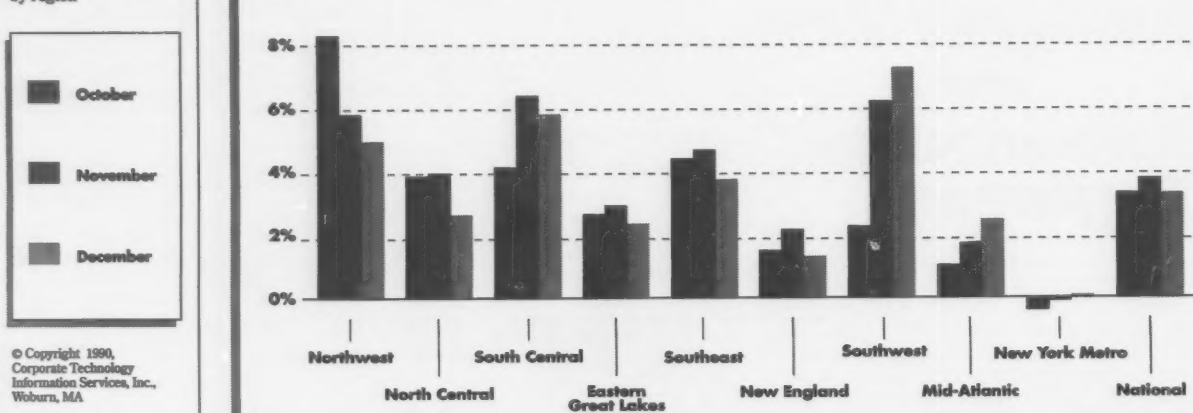
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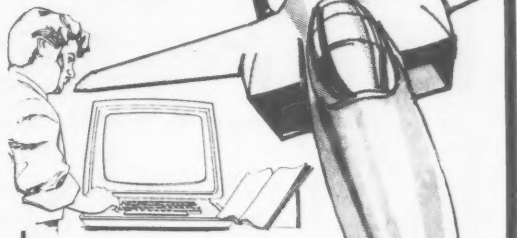
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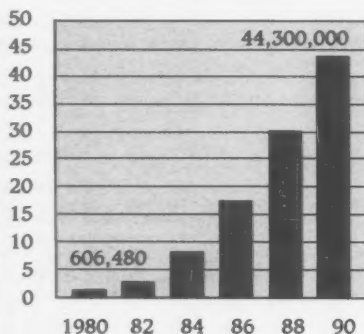
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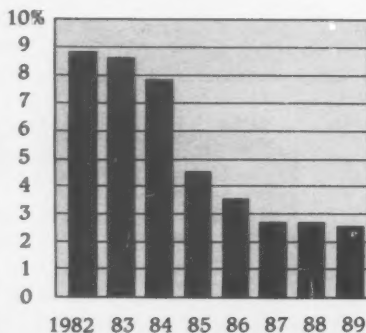
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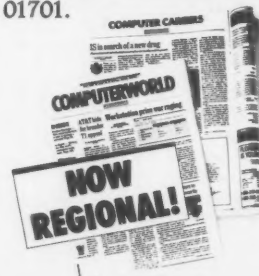
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MARKETPLACE

Desktop publishing for less than \$200

BY JESSICA KEYES
SPECIAL TO CW

Information systems managers don't have to know a lot about publishing to provide their users with technology that can create professional-quality newsletters, fliers and documentation. In fact, a slew of easy-to-use, low-end desktop publishing software packages are available at a low price.

On the low end of the price scale is a desktop publishing package that costs nothing. Most firms already own word processing packages such as Microsoft Corp.'s Microsoft Word and Wordperfect Corp.'s Wordperfect, which come with built-in publishing capabilities that allow users to handle more than one column of text at a time, print different fonts and point sizes and integrate graphics.

Some fairly sophisticated documents can be created with these packages, but there are limitations. For instance, higher end

packages can handle many more fonts at a time, do indexing and handle sideways printing, to name a few features. Thus, for users who need more advanced publishing tools, word processing-style desktop publishing just won't cut the mustard.

Fortunately, the next level of desktop publishing software isn't very expensive. Packages are available for less than \$200. In

screen. This WYSIWYG feature is extremely important, because it will save users time and much wasted paper. When someone is working on a document, he can see only one portion of it at a time. With WYSIWYG, users can see a miniature version of the complete page or series of pages.

• **Ability to import text.** There are few desktop publishing packages that have as robust a set of text-handling capabilities as word processing packages. Frequently, desktop publishing users type all the copy on their word processors and then import the text into their publishing packages. Automatic conversion of word processing formats is a convenient feature to facilitate this process.

• **Text-processing features.** Even though a large majority of users rely on their word processing packages for text processing, there are some desktop publishing packages that do sport some text-processing features such

as control over hyphenation, kerning (distance between letters), word spacing, global search and replace, reverse type, automatic page numbering and tabbing.

• **Font limitations.** Fonts are the different typefaces used to

prepare documents. A document prepared in only one font or size is rather dull and runs counter to the ideal presentation allowed in desktop publishing.

While many packages come with several built-in fonts, the final print quality is rather limited. To produce professional-looking documents, most users resort to buying fonts from other vendors.

The most popular package — and the standard for most desktop publishing — is Bitstream. Bitstream fonts are known as "soft fonts" and are downloaded into a laser printer. The time it takes to install and use these fonts is a bit of a nuisance, but the final product is definitely worth it.

• **Page design and layout features.** This is actually the user interface to desktop publishing. These tools are generally used every day, so it's important to ensure that the selected desktop publishing package has as many features as possible. Some of these features include text wrap around graphics, letter spacing, kerning and leading.

• **Landscape and portrait modes.** There are several considerations here; that users can display a reduced, expanded or zoomed version of the page; that

the package allows users to add headers and footers; that the package has an automatic text-flow capability to permit text to be moved from column to column automatically; that the package comes with preconfigured style sheets; and that the package can show facing pages.

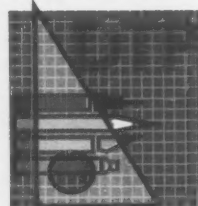
• **Ability to handle graphics.**

There are two ways of manipulating graphics. One way is to import the graphic image directly into the publication. To do this, the desktop publishing package must have the ability to support

graphics file formats such as EPS, PCX, PICT and Tag Image File Format (TIFF) — the most common being PCX and TIFF. If users do a lot of scanning, this feature becomes even more important, as most scanners save images in TIFF.

Heavy-duty desktop publishing packages carry a hefty price tag in terms of memory and disk requirements. Luckily, the less-than-\$200 bunch provides all the functionality that the typical IS worker needs to create professional-looking documentation.

Keyes is president of New Art, Inc., a management and computer consulting firm in New York.



Most popular desktop publishing tools:
Software Publishing Corp.'s PFS First Publisher 2.1 — \$129
Timeworks' Publish-It 1.13 — \$200
Springboard Software's Springboard Publisher 1.01 — \$129.95
Logitech, Inc.'s Finesse 3.0 — \$179
Other available packages:
Array, Inc.'s Frontpage Personal Publisher
CSI Publishing, Inc.'s Pagebuilder 2.0
Data Transforms, Inc.'s Frontrix 3.0

selecting a good desktop publishing package that falls into this low-end price range, buyers need to evaluate an array of features:

• **What-you-see-is-what-you-get.** Make sure the desktop publishing package has the ability to display the final document on the

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AT Model 099	\$650	\$975	\$500
AT Model 239	\$875	\$1,025	\$750
AT Model 339	\$925	\$1,100	\$900
PS/2 Model 30-286	\$1,100	\$1,300	\$1,025
PS/2 Model 60	\$1,500	\$1,800	\$1,400
PS/2 Model 70P	\$3,000	\$3,450	\$3,000
Compaq Portable II	\$900	\$1,050	\$875
Portable 286	\$1,100	\$1,450	\$1,000
SLT 286	\$2,300	\$2,500	\$2,000
Portable 386	\$2,300	\$2,800	\$2,200
LTE 286	\$2,000	\$2,100	\$1,850
Deskpro 286	\$1,000	\$1,200	\$975
Deskpro 386/30	\$2,900	\$3,100	\$2,400
Apple Macintosh Plus	\$750	\$975	\$700
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RFP No. 1934, due Thursday, January 31, 1991 at 3:30 p.m. for the acquisition of a local area network for the Technical Related Studies Program at the Tupelo, Mississippi campus of ITAWAMBA COMMUNITY COLLEGE.

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BY TORI L. COWARD
SPECIAL TO CW

We all find ourselves, at one time or another, laughing at someone else's errors or mishaps. But we're not really laughing maliciously: We're just glad we're not in that person's place. As an information systems trainer for 10 years, I've stood in that person's place, bearing the burden of those unexpected slipups in the classroom. As a result, I know how to tap-dance out of some pretty tough situations.

For instance, have your computers ever broken down at the start of your training session? Have you ever dealt with a very resistant learner? Have you ever had to provide support for unfamiliar software or had to train people to use it tomorrow?

Every IS trainer will have his day (in fact, can you name a day when something, big or small, didn't happen?). But don't despair. Training nightmares can actually enhance your experience and make you become a more versatile trainer.

The next time you think, "It just couldn't get any worse than this," think of some of the following bloopers and blunders (listing

from least to most common), which may even help you in your travels.

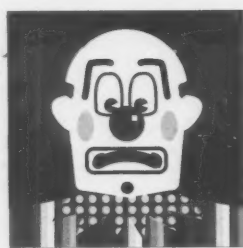
• **Evacuation day.** One trainer had her class interrupted by a fireman who banged on the training room door yelling, "Evacuate — gas leak in the building!" She didn't argue with him and had the group meet outside. She continued the class in the parking lot, focusing her discussion on the computer center help desk.

• **Class act.** Certainly, training when you're ill or when you have a sore throat isn't a lot of fun. But recently, a seminar leader ate dinner at his hotel the night before the seminar and came down with food poisoning. Because many participants had flown in from out of state, he was determined to conduct class. After he went to the hospital, he held classes as scheduled the next day — by adding several additional breaks, of course.

• **St. Domino's.** During one training excursion, I returned a rental car just a few streets down from my hotel — or so I thought. I didn't mind walking a little way with my equipment, but I found out it was 10 blocks down (we're talking San Francisco now), and I wasn't used to walking at a 45 degree angle. After trying unsuccessfully to flag a cab, I noticed I

was standing in front of a Domino's Pizza. I went in and asked them, "If I order a pizza, can you deliver me and the pizza to the hotel?" And they did!

• **Blame it on the rain.** During one training session, water started dripping from the ceiling. A leaky roof isn't so unusual, but suddenly it started raining inside



the classroom! The trainer and the learners disconnected the computers and fled from the room. They reassembled in the cafeteria and resumed the class. It was later determined that a water main had broken just above the training room.

• **Teachable moments.** Whether it's the computer system, printer, overhead projector or the audiovisual system, one of them is going to die sometime. And that piece of equipment is

going to pick your session to collapse. What do you do? The best technique passed on through the training industry is called the "teachable moment." That is, when the system fails, teach the students *what to do when the system fails*. Do they call the help desk? Or check the manual?

Another approach is to switch the discussion to the concepts involved. Depending on the equipment that failed, try an alternate training approach, such as two per workstation or group exercises.

• **Apples with pears.** Another common nightmare is having to train students with different experience levels in the same class. Whatever technique you use, you must keep the advanced students occupied.

The technique I have found to be most successful is two people to a terminal. Pair an experienced learner with an inexperienced learner, and most often, you will find the experienced learner teaching and assisting the beginner. Further, the experienced student will also catch, prevent or correct wrong keystrokes that might have required your assistance.

• **An ounce of prevention.** Of course, if you thought of prevention, you wouldn't be experiencing a nightmare, would you? Here are some ways to avoid potential problems: Practice and rehearse your training session beforehand. Have a dry run, if possible, with a class made up of other trainers,

technical experts and test students. Conduct an equipment check before every class, preferably the day before. Have someone else run through your exercise. Is it understandable? Any confusing points? Anything that doesn't work? Make sure you have more than enough materials, handouts, pens, etc.

Establish a "Plan B." Think of alternatives. Ask yourself: What if the projection system fails, what if the flip chart falls apart, what if the markers run dry, what if the bulb burns out?

• **The silver lining.** Remember how you never backed up files faithfully until the first time you reformatted your hard disk? Ever reformat it a second time? Not as likely. The good thing about handling nightmares is that they teach you to become a better, more experienced trainer.

Experienced trainers still have nightmares, but they are more prepared to handle them when they occur, prevent the common ones and recognize potential ones.

• **Lennon twist.** In conclusion, the trick to dealing with nightmares is to keep this in mind: Uncommon situations call for uncommon solutions and creative approaches. John Lennon sang, "There are no problems, only solutions." With that approach in mind, you will find solutions when faced with any difficulty.

Coward is a trainer and consultant at Tangent Computer Resources in Dallas.

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ADVERTISERS INDEX

Andersen Consulting	71
AT&T	16-17
AT&T Paradyne	64-65
B I Moyle Associates, Inc.	29
Bachman Information Systems ..	10
Banyan Systems	48
BMC Software	36
Cambex Corp	18
Chipcom Corp	14
Computer Associates	20-21, 46-47, 68-69
CW Circulation	40
DCA	52
Hewlett-Packard	12-13
IBM	26-27, 34-35, 42-43
Installed Technology International ..	55
J.D. Edwards & Company	50-51
John Wiley & Sons	66
Legent Corp	19
Micro Focus	37
Microcom	56
Multi-Tech Systems	58
NEC	23, 38-39
North Ridge Software	45
Oracle Corp	5, 7, 9
SAS Institute	15
Software 2000	30-31
Software AG	28
Software Engineering of America ..	4
Sterling Software	32
Sybase, Inc.	11
Synsort	3
Texas Instruments	C3
Universal Data Systems	60
U.S. Robotics	59
World Expo Corporation	70
XDB Systems	41
Zenith Data Systems	54

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COMPUTERWORLD

P.O. Box 2043, Marion, Ohio 43305

Mattel VSAT net to be dismantled

BY ELISABETH HORWITT
CW STAFF

HAWTHORNE, Calif. — A 2-year-old satellite-based network that was supposed to meet Mattel, Inc.'s global communications needs for years to come is now heading for the scrap heap.

Responding to complaints from overseas sites of molasses-like file transfers and interrupted computer-aided design transmissions, the toy maker's information systems department has decided that its worldwide networking needs will be better served by a fiber-optic-based system, according to David Watson, director of communications systems.

About three years ago, Mattel decided to move its global communications to a single, private, satellite-based network, primarily because network costs were hard to track on the existing "hodgepodge of leased lines and value-added network" links, said Jeff Harris, who was then the toy maker's director of information technology.

The present very small-aperture terminal (VSAT) system connects Mattel's Phoenix data center to manufacturing and distribution centers throughout Europe, as well as to major manufacturing sites in the Far East.

The network supports a wide range of crucial IBM Systems Network Architecture interactions among Mattel's overseas

sites and between those sites and the Phoenix data center.

The current system has three major drawbacks, according to Wolfgang Webber, manager of MIS at Mattel GmbH in Germany. First, response-time problems have resulted from the fact that most sites have only 9.6K bit/sec. or less with which to conduct all of their data communications. "Of course, that is not enough," Webber said.

Second, the VSATs are prone to failure, particularly under bad weather conditions. Third, all communications between European affiliates must go through the Phoenix satellite hub, causing serious response-time problems.

Quicker response

The new network is expected to trim response time significantly. For example, it will take German users four to six seconds rather than the current 20 to 30 seconds to access the Phoenix data center.

After careful study, Mattel concluded that the price of overseas fiber-based links has declined to the point where the medium provides a more cost-effective solution than satellite, Watson said. For example, a 64K bit/sec. link from Phoenix to the UK by means of a satellite costs \$149,000 per year, while a comparable fiber-based link, based on a three-year contract with AT&T, will cost Mattel \$92,500

per year, he added.

In addition, Mattel will be able to save money by moving voice communications onto its fiber-optic links, Watson said.

The new network will also provide German Mattel with a direct 128K bit/sec. link to the U.S., eliminating the need to go through the UK hub. In addition, European and Asian plants and affiliates will be able to communicate directly, rather than via Phoenix, Watson said. Overseas design engineers will be able to download CAD files directly from Phoenix's CAD system, rather than through a series of IBM Application System/400 SNA links, he added.

Mattel also plans to implement a network management "that lets the network control center in Phoenix monitor the entire global network," Watson said. Under the existing system, "Some locations would wink out, and we wouldn't know about it until they called," he added.

AT&T will provide the fiber connections between the U.S. and overseas through its Worldband program, which allows the customer to amalgamate bandwidth between different overseas links to qualify for price discounts. Links among overseas countries will be provided by a combination of international carriers such as Cable & Wireless PLC, with value-added network providers such as GE Information Services supplying packet-switched links to out-of-the-way locations such as Chile.

Mattel said it plans to choose either Timeplex, Inc. or Newbridge Networks, Inc. by Jan. 18 as the supplier for T1 multiplexers that will distribute bandwidth at various sites worldwide.

Travelers goes wireless

Firm chooses Token-Ring LAN for mobility

BY JOANIE M. WEXLER
CW STAFF

HARTFORD, Conn. — The highly mobile atmosphere at The Travelers Corp. has prompted the firm to seek wireless local-area networking to handle rapid-fire installations at its 21 field offices. The Travelers, an early IBM Token-Ring LAN adopter, is filling its need with the first IBM Token-Ring-compatible wireless network on the block, which starts shipping this week.

The Travelers has been beta testing BICC Communications' Infranet for nearly three months. The insurer has committed to installing six initial \$2,995 base units, said Nick Blazensky, director of The Travelers' Telecommunications Division.

Since 1985, when IBM first introduced the Token-Ring network, The Travelers has installed 135 IBM Token-Ring LANs running at 4M and 16M bit/sec. speeds. BICC's compatibility with IBM Token-Ring standards thus was a key criterion for The Travelers.

Infrared technology

BICC's Infranet is based on infrared technology. Other emerging wireless LANs, such as NCR Corp.'s Wavelan and Motorola, Inc.'s Wireless In-building Network (WIN), are based on microwave technologies. Neither of the microwave technologies, however, are standards-based.

Cost-wise, Blazensky said, a cabled IBM Token-Ring network costs "anywhere from

\$325 to \$1,100 per port." The Infranet configuration totals about \$500 per port, "but, unlike cable, is a reusable resource that we will amortize over five years," Blazensky said.

"An upper-end cabled network could cost us \$100 per month compared with \$10 a month for the wireless network," he noted.

Blazensky remarked that "in 1990, we saw a need for 140 new links, mainly because of an explosion of new applications for Token-Ring networks."

Big payoff in speed

The real payoff of the wireless network, Blazensky said, was "being able to react to users' requirements in a hurry. This means not having to drill holes and get cable ordered and installed."

BICC said that installing an Infranet is a matter of aligning bar graphs on the base unit and optical nodes. Two optical nodes that interface the workstations with the base units ship with each six-port base.

The vendor said its LAN is Underwriters' Laboratories, Inc.-approved and requires no Federal Communications Commission licensing.

Blazensky and BICC said Infranet gets around at least part of the line-of-sight problem of infrared by mounting the optical nodes in a 7-ft., 6-in. cluster configuration.

The height is intended to prevent humans from walking through the transmission path.

Cables

FROM PAGE 1

Jan. 4 outage wondered why AT&T was doing its maintenance during prime time. "We never let anyone touch mission-critical applications during the day unless it's an emergency," he said.

Two large AT&T users — General Electric Corp. and United Parcel Service — said their AT&T representatives told them that close to 400 T3 circuits were impacted, although AT&T would not confirm that number. T3 circuits carry traffic at 45M bit/sec. speeds.

Frank Paccione, vice president in telecommunications at Banker's Trust Co. in New York, said a way to minimize disruptions would be for the carriers and the user community to work together. "Rather than digging in their heels saying it's their problem and they'll fix it, all the carriers should be more open with the network designers at user firms. Together, we should

identify potential problems and come up with actions," he said.

"I have no concerns about fiber as a medium," said Joseph Gianotta, commissioner of the Computer and Data Communica-

THE PROBLEM IS THAT "with fiber, you have so many eggs in one basket that it's much more dramatic when fiber breaks."

JIM MORGAN
CONSULTANT

tions Services Agency in New York. He did say, however, that the carriers need to work on providing alternate fiber paths.

A mayor's task group in New York is working to develop a cooperative plan under which competing carriers — interexchange, local and alternative — will back each other up in the event of a major outage. Thomas Dunleavy, assistant commission-

er at the Department of Telecommunications and Energy, said the effort, begun last September, is slated to be completed at the end of the third quarter of this year, and implementation will begin immediately.

The problem is that "with fiber, you have so many eggs in one basket that it's much more dramatic when fiber breaks," said Jim Morgan, an independent consultant in Morristown, N.J. A single pair of fiber cables can support 37,500 simultaneous telephone calls, while a single pair of copper supports a paltry 24, according to Business Research Group in Newton, Mass.

"With the old system, you have a heavy network of alternate routes built over 100 years," Morgan said. "There has not yet been time to build in that redundancy with fiber."

AT&T spokesman Bob Nersesian — who estimated that AT&T has spent between \$2.5 billion and \$3 billion each year since 1984 on network reliability — said three major redundancy projects are in the works:

• A call-routing system that will

provide more than 100 different ways to route over the network. Currently, AT&T provides 21.

• An expert system that mimics what network managers can do in a fraction of the time and can restore most calling in 15 minutes.

• A restoration system that will automatically draw upon spare AT&T circuits in hundreds of ca-

bles around the country.

AT&T also said it intends to offer customers more options for purchasing backup routes to the AT&T network.

U.S. Sprint said it is installing technology that will create a "self-healing" network. Central office hardware and software will give Sprint's network the ability to reroute traffic instantaneously, according to spokesman Steve Dykes.

MCI Communications Corp. said the self-healing nature of its ring architecture, which loops traffic back from a point of failure, has thus far kept the impact of MCI fiber cuts to a minimum.

MCI, however, does plan to replace its infrastructure for network control during the next two years with an artificial intelligence-based system, said Fred Briggs, senior vice president of network services at MCI.

Higher in fiber

AT&T plans to have 100 alternate routes by the end of this year to handle calls in the event of a fiber cut

Number of alternate fiber routes

November 1988
Fiber cut in South Amboy, N.J.

14

Jan. 4, 1991
Fiber cut in Newark, N.J.

21

Planned by fourth-quarter 1991

100

Source: AT&T

CW Chart: Paul Mock

NEWS SHORTS

User alliance maps next move

The User Alliance for Open Systems announced a major conference last week that has been scheduled for March 12-14 in Dallas to write an implementation plan for breaking down the barriers to open systems computing. It will be the first meeting of the user group, once known as the Houston 30, since the group voted to join the Corporation for Open Systems in McLean, Va.

Commodore replaces president

Despite analysts' initial high hopes, the president of Commodore Business Machines, Inc. has apparently come up short once more. Onetime IBM and Apple Computer, Inc. executive Harold Copperman was replaced last week as Commodore's president and was reassigned as a vice president of parent Commodore International Ltd. The company also announced layoffs of 10% to 15% of its 600-person U.S. work force. Commodore earned a profit of \$1.5 million for the fiscal year 1990, down 97% from the previous year. Copperman's successor, James Dionne, former head of Commodore's Canadian unit, becomes the fifth Commodore president in just over six years.

Pyramid tries high availability

Pyramid Technology Corp. is expected to announce its Miserver Reliant series of high-availability (but not fault-tolerant) computers next week. Unlike fault-tolerant machines, Pyramid's CPUs will all be shouldering work until a failure is detected, at which time the software will automatically switch applications to the remaining processor or processors. A four-processor package starts at \$700,000. The system has about a three-minute recovery time, according to Pyramid, which recommends it for applications such as manufacturing, inventory and planning that can stand a few minutes of downtime. Sandy Gant, an analyst at Santa Clara, Calif.-based Gartner Group/Infocorp, said the idea of selectable and incremental high availability is a "good approximation of fault tolerance without paying a huge premium."

Steel maker outsources

Wheeling-Pittsburgh Steel Corp. announced last week that it has outsourced mainframe operations to Pittsburgh-based Genix Group in a multiyear contract. Wheeling-Pittsburgh will use Genix's mainframe CPU, operating system software, disk and tape storage, data communications and technical support, but it will retain in-house applications development and maintenance. Terms were not disclosed. Ironically, Genix originally grew out of the IS department of the former National Steel Corp., a Wheeling-Pittsburgh competitor.

IBM ties up with Ontologic

IBM made another move in the object-oriented technology market last week when it announced plans to jointly market Ontologic, Inc.'s database management system. Ontologic has been selling an object-oriented DBMS since the late 1980s and claims to have 350 licenses worldwide. IBM and Ontologic will jointly sell the company's software for the IBM OS/2 platform.

Martin Marietta restructures

Government contractor Martin Marietta Corp. announced a corporate restructuring last week that will merge its computer contracting and internal information systems units, now based in Chantilly, Va., with the Electronics and Missiles Group in Orlando, Fla. The move will cut overhead costs and eliminate 400 jobs but will not diminish the company's commitment to the IS business or affect its data centers, a spokesman said.

SQL/DS passed FIPS test

IBM Canada Ltd. issued a release last week stating its SQL/DS, the relational DBMS for the IBM VM environment, now fully complies with the Federal Information Processing Standard for both embedded and interactive SQL. The mainframe DBMS was developed at IBM's laboratory in Toronto.

Intel moves on mass memory market

BY RICHARD PASTORE
CW STAFF

Personal computer users looking for alternatives to pricey system-vendor memory upgrades can now turn to Intel Corp. for memory modules that plug into the motherboards of some IBM, Compaq Computer Corp., Zenith Data Systems and Hewlett-Packard Co. PCs.

Users needing 72-pin, 80-nsec memory modules have previously had to choose between the vendor's boards and those of relatively little-known third-party suppliers, Intel business unit manager Kirby Dyess said. Intel's Matched Memory series, to be launched today, will offer users big-name comfort and machine-specific design. "System-specific memory takes care of the quality concerns of users running mission-critical applications," Dyess said.

While the simpler, third-party 30-pin single in-line memory modules (SIMM) are quite reliable, the faster, 72-pin third-party modules will sometimes cause problems, noted Bruce Greif, project analyst at County Natwest, Inc. in New York.

Analysts said they expect Intel's name to provide its market leverage. "Because this is a large computer company with a history with chips, [Intel's SIMMs] will definitely have an impact," said Mark Levitt, an analyst at International Data Corp. in Framingham, Mass.

Intel has been marketing its

Above Board memory upgrades for several years. These modules plug into expansion slots rather than the motherboard.

Intel is also hoping to compete on price. Intel set list prices of \$225, \$445 and \$945 for its 1M-, 2M- and 4M-byte SIMMs, respectively. Compaq's equivalent products list for \$299, \$599 and \$1,199. IBM's prices run

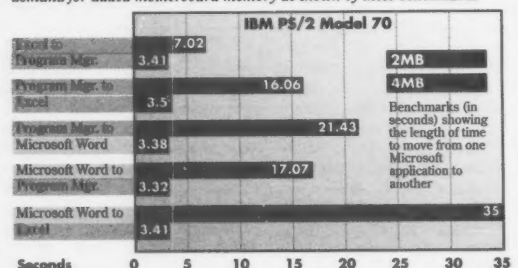
phen Anderson, information systems architect at the state of Washington's Department of Social Health Services.

"If I can get the Intel SIMMs at or near commodity prices, I can significantly cut my cost on the PC," Anderson said.

Compaq spokesman John Sweeney cautioned users against installing non-Compaq boards.

Climbing through Windows

Intel perceives Windows 3.0 performance capabilities spurring user demand for added motherboard memory as shown by these benchmarks



Source: Intel PC60

CW Chart: Doreen St. John

slightly less than Compaq's.

While a random street-price sampling of 1M-byte Compaq modules yielded an average price of \$260, an Intel 1M-byte SIMM will cost less than \$157, a spokeswoman indicated.

Users said they are already using less-costly vendor alternatives. "Because Compaq and IBM SIMMs are so fiercely expensive, we go out to the market and find a discounter," said Ste-

With third-party modules, "end users are creating potential problems for themselves in trying to diagnose problems and allocate responsibility," he said.

Dealers also face this consideration when deciding to configure PCs with third-party modules. "Some dealers want to have a complete IBM or AST system," Levitt noted. "But if the price is right, they'll be able to save some money."

E-mail

FROM PAGE 1

Bonita Bourke and Rhonda Hall, former Nissan employees, claimed last week they were each shown a stack of their E-mail last year and told to stop their nonwork-related E-mail.

Days after filing grievances with Nissan's human resources department, Hall said she was fired and Bourke said she was offered the opportunity to resign. Hall and Bourke admitted to using E-mail for personal communication. Bourke said the messages Nissan collected included interdepartmental "business correspondence, messages people sent me [and] some wisecracks about the company."

Hall said management had told employees that confidential passwords protected their messages from any interception.

Last week, however, a Los Angeles County Superior Court judge dismissed a class-action lawsuit brought against Epson America, Inc. for allegedly violating its employees' privacy by intercepting their E-mail [CW, Aug. 13, 1990].

A spokesman for Epson in

Torrance, Calif., said Judge Barnett Cooperman found on Jan. 7 that the company did not violate a state penal code prohibiting electronic eavesdropping on private communications. "In essence, the judge said companies have the right to manage their E-mail systems," Epson has maintained that it randomly intercepts messages in the process of maintaining its systems.

Simple misunderstanding

Noel Shipman, the Los Angeles attorney representing both the unnamed plaintiffs in the Epson case and Bourke and Hall in the Nissan case, said Judge Cooperman had misinterpreted the penal code. The suit arose from the firing of Epson employee Alana Shoars, who claimed she was terminated for protesting the alleged interception and printing of E-mail messages.

E-mail is widely credited with enticing technophobes onto computers by humanizing the devices. But if recent events are any indication, E-mail may be doing its job too well.

At Belmont, Calif.-based Oracle Systems Corp., an employee reportedly used E-mail to bare her feelings in a scathing mes-

sage to her boyfriend, also an Oracle employee.

"Boy, did she let him have it," said one of the inadvertent recipients of the message. When the woman had finished her letter, she hit the wrong transmit key and broadcast the message to every computer user in the firm.

According to University of Washington at Seattle professor Mark Haselkorn, "People who use E-mail open up so much sometimes that it's too much." Haselkorn was part of a national congressional study on the effects of E-mail within the government and organizations.

While some firms take the position that personal use of E-mail is a waste of time and property, others seem willing to tolerate judicious use of the software for anonymous or open forums.

Interleaf Corp. takes the more liberal tack. As long as their work is done, employees can use the social communications branch of the firm's E-mail, or they can link to an outside bulletin board-type E-mail service that allows users to read about and transfer their feelings on an array of topics, including sexual fantasies, according to Leslie Valdes, a production editor.

Stolen laptop jeopardizes UK's Persian Gulf plans

BY RALPH BANCROFT
IDG NEWS SERVICE

LONDON — A military laptop computer has become the focus of one of the biggest security investigations in years, with hundreds of police officers working to recover data that could compromise secret plans for offensive action against Iraq.

Hundreds of known criminals have been interviewed along with their "fences" in an attempt to locate the computer, it was disclosed last week. The laptop was stolen from an official car on Dec. 17, but government officials were able to control news reports, convincing British newspapers to report only that documents had been stolen and subsequently recovered.

The computer was stolen from a car used to transport Royal Air Force Wing Commander David Farquhar, staff officer to Air Chief Marshal Sir Patrick Hine, joint commander of British forces in the Gulf.

The RAF officer had just left a briefing session with Prime Minister John Major at his Downing Street residence in Westminster and was returning to battle head-

quarters at RAF Strike Command in High Wycombe, Buckinghamshire.

Farquhar decided to stop at a car showroom to look at some second-hand Range Rovers. While he and his driver looked over some of the models for sale, the thief struck.

Not a plot

News reports here generally accept that the thief was a common criminal and not a secret agent hired by Saddam Hussein. Along with the laptop, two briefcases containing classified papers dealing with strategy and logistics in the Middle East were stolen; the briefcases were recovered within hours of the incident, discarded in a rubbish dump with the papers intact.

After a newspaper in Ireland ran the story, the theft became headline news in all the national newspapers. The ministry is not saying what information was held on the laptop, but most newspapers reported that it was even more sensitive than that in the stolen papers.

Bancroft is an IDG News Service European correspondent based in London.

Army's IS

FROM PAGE 1

provides systems support for logistical functions such as supply, personnel records and administration. Much of the system is outdated by commercial computer standards and has never been used in a real war situation, according to Goyette.

Information Systems Operations personnel have been working with the Saudis to install networks and construct telephone, radio and microwave communications systems since August.

"We've had about 120 days to implement the kinds of systems we've had 20 years to put together in Europe," Goyette said, adding that Saudi Arabia's public telecommunications network

has been unable to support many of the Army's needs.

The Information Systems Operations setup in the Middle East theater includes a mobile communications command, an IS en-

THE LARGEST and newest of the U.S. Army's networks being used for Operation Desert Shield is the 2-year-old Defense Data Network.

gineering command and thousands of systems — including mainframes, minicomputers and personal computers — tied to-

Bank's IS awaits FDIC actions

BY CLINTON WILDER
CW STAFF

BOSTON — It was business as usual for the information systems department at the failed Bank of New England last week, but that stable-on-the-surface situation could change dramatically in the near future as the scenario of the bank's estimated \$2.3 billion federal bailout unfolds.

The Federal Deposit Insurance Corp.'s (FDIC) Jan. 6 rescue of the \$30 billion regional bank had no immediate impact on day-to-day IS operations, said IS executives at both Bank of New England — now renamed New Bank of New England — and the FDIC.

"The only change that I can foresee is that the FDIC, as the new owner, may ask us to run some special reports on our customer base," said Jack Martin, the bank's executive vice president for operations and technology. "There's no change in daily operations. We continue to service all our internal and external customers."

The future of IS and the status of the bank's vendor contracts remain question marks, however, as potential acquirers — most prominently Bankamerica Corp. — work with federal regulators on a possible sale.

Although a spokesman for San Francisco-based Bankamerica declined comment, another possible acquirer, Banc One Corp. in Columbus, Ohio, said a Bank of New England sale could effectively cancel all of the bank's contracts with IS suppliers. In 1989, Banc One acquired 20 Texas banks formerly owned by MCorp, the Dallas-based bank holding firm bailed out by a simi-

lar FDIC takeover.

"Everything that had to do with the old bank [ownership] is subject to renegotiation," said John A. Russell, vice president and director of corporate communications at Banc One. "All claims [from suppliers] would go against the old owner, which in this case would be the FDIC. This permits the buyer to take it free of litigation."

Outside help

Most of MCorp's processing had been outsourced to Electronic Data Systems Corp. and was brought in-house by Banc One's IS subsidiary, Banc One Services Corp. By contrast, Bank of New England runs a large in-house operation, with an overall banking operations staff of about 3,000 and an IBM 3090-based data center in Malden, Mass.

However, Bank of New England outsourced its trust accounting and securities processing last year to SEI Corp., a services firm in Wayne, Pa. SEI is investigating the potential impact of the FDIC bailout on its multiyear contract, said Wayne Witherow, a vice president on SEI's legal staff. He refused further comment, although an SEI spokesman noted that SEI's work is "on a profitable side of the bank."

In a sense, the effects of Bank of New England's demise on IS have already occurred in the form of massive cutbacks and management changes during the past year or so, during which the bank reported huge losses.

The bank operations staff has been slashed from 4,200 to 3,000, and the programming staff has been cut nearly in half, from a high of 475 to 255. Martin, formerly at Bank of Boston

Corp., was part of a new management team brought in earlier this year in a last-ditch effort to reverse the bank's slide toward bankruptcy.

One of Martin's key achievements was completing a credit support system designed to track the type of bad loans that got the bank into such financial trouble. The system prototype is currently running and is being evaluated by end users, Martin said.

William Synnott, a Wellesley, Mass., banking IS consultant and former Bank of Boston chief information officer, speculated that the FDIC would like to leave Martin and the management team in place even after a sale. "They have given them a vote of confidence so far and would probably leave them alone, although they would oversee them closely," he said.

The FDIC itself will probably end up owning some of Bank of New England's assets, which would become the FDIC's processing responsibility. The Washington, D.C.-based agency recently replaced an Amdahl Corp. 5990 Model 700 mainframe with the new IBM Enterprise System/9000 Model 720 and would be able to handle the additional transaction volume, said John N. Weiss, deputy director of the FDIC's management information services branch.

Bank of New England's misfortunes are largely blamed on the aggressive acquisition and lending policies of former Chairman Walter Connolly, who was fired last year. Connolly's right-hand man, President Gordon Ulmer, was a former IS executive who moved to general management [CW, Feb. 20, 1989]. Ulmer retired last month.

gether on a sprawling network based on Transmission Control Protocol/Internet Protocol (TCP/IP).

"The people in the theater who are actually over there are working hard with the Saudis, putting in 17 to 18 hours a day. And they're breaking new ground for the army," Goyette said.

The largest and newest of the

Army's networks being used for Operation Desert Shield is the 2-year-old Defense Data Network (DDN). The DDN is a TCP/IP-based international network that carries voice, video and data transmissions, including electronic mail, among Army units and between the Army and the other armed services. One element of the DDN is the Internet network.

One of the core application sets running over the DDN during Operation Desert Shield is the Army's Standard Information Management Systems (SIMS), which is used mostly in the mobile processing units for financial and personnel records and supply inventory. SIMS is based on multiple hardware platforms, including IBM and Unisys Corp. mainframes, and uses varied communications architectures, such as IBM's Systems Network Architecture.

However, not all Army units

have access to the DDN. According to Goyette, some groups are still using batch applications that have not been upgraded to run over the DDN and therefore must rely on the batch-oriented Automated Digital Network.

The Army's own policies have prevented still more problems. Procurement guidelines allow bureaucrats to take as long as six years to make a decision on a request for a purchase that a unit wants within a year.

"There is an existing system in the world that tests the effects of the use of biological and chemical weapons on the soldiers for the purpose of treating them that we wanted to build into our system directly," Goyette said. But that would have meant buying both hardware and software. Goyette had to settle for an interim solution — one that he is unhappy with — that has medical personnel depending on gateways to a program running here.

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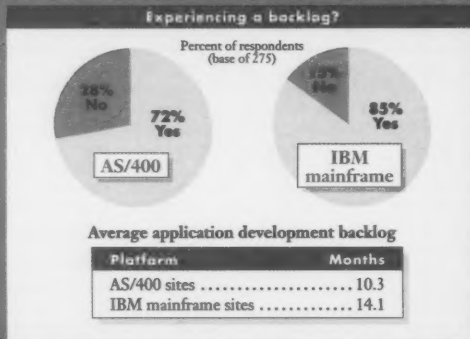
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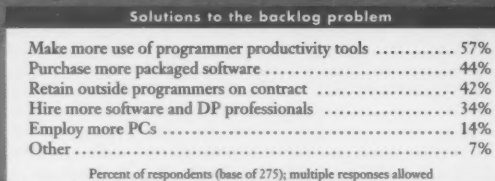
AS/400 Software

Despite the large number of third-party software packages available for the Application System/400, application development backlogs are a common problem

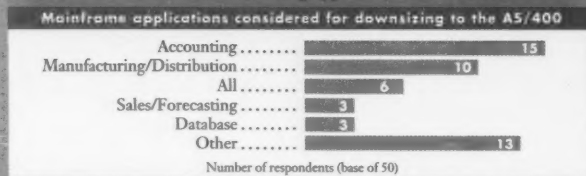
Seventy-two percent of responding companies suffered from AS/400 application development backlogs, with the average time being just over 10 months



IS professionals hope increased use of productivity tools will put a dent in the backlog problem, stating that more off-the-shelf software purchases are the next best solution



Only 18% of the total number of respondents are planning to port existing mainframe applications to the AS/400, with the most common being accounting and manufacturing applications



Source: Sentry Market Research, Westboro, Mass.

CW Chart: Marie Hanes

NEXT WEEK

Robert Henderson ▶ likes being in the information systems profession and works hard at his job as a senior systems analyst. But he, along with other minorities in the field, say working hard may not be paying off: Few minorities advance into upper management positions in IS. Read In Depth next week to find out what life is like for minorities in IS.



Katherine Lambert

Although many U.S. firms are just beginning to react to the troubled economy and changes in the marketplace, ITT Hartford began downsizing operations in 1987. Next week in Manager's Journal, John T. Crawford, vice president of information management, discusses maneuvering IS through company layoffs and attrition programs.

INSIDE LINES

An NBC bulletin

NBC-TV's Stations Division is the latest information systems organization to recentralize. NBC is expected to announce today that the central organization in New York will exercise more control over technology standards at the six company-owned stations around the U.S. The division decentralized when each station installed an IBM Application System/400 to replace a central Unisys mainframe, but now it will "go against the idea that everyone can have their own mini-MIS department," said Joe Harris, director of information technology.

Intercontinental missions

It looks like this will be an active winter of corporate wheeling and dealing on the other side of the Atlantic. According to European sources, Olivetti will be put on the block within the next three months, and a Japanese giant — possibly Fujitsu — has already expressed an interest in purchasing the Italian corporation. There has also been some speculation that a for sale sign is expected to appear on the front lawn of Bull, and sources indicate that NEC is a top contender to make the purchase.

Serving up everything

In a perfect world, DEC would use Comnet '91 to launch its long-delayed Decnet Phase V for VMS — but that reportedly is still bogged down. Instead, the vendor is expected to announce its Comserver family of intelligent, multipurpose communications controllers for VAX/VMS systems. Each controller can be configured with eight out of a total of 14 common networking protocols, offloading the network processing from the VAX.

An IBM/Unix transaction

Question: How will IBM incorporate transaction processing capabilities into its Unix systems? **Answer:** With a new product slated for introduction this week by Transarc Corp. in Pittsburgh. The technology, which will be based on the Open Software Foundation's Distributed Computing Environment, will also be supported by Hewlett-Packard and Stratus Computer. Although the Transarc announcement will occur this week, look for more details about how IBM and friends are expected to use the technology when they make announcements during Uniform 1991, a trade show to be held in Dallas later this month.

An IBM PS/2 transaction, missed

IBM must be having a hard time getting its new Personal System/2 Model 95s out the door. Gibson Greetings manager of business systems Robert Martin says he was all set to buy one of the new servers, but IBM couldn't find one to sell him. Despite calls to manufacturing sites, no boxes were found. Martin, who couldn't wait forever, took delivery last week of a Compaq Systempro instead.

Mea culpa

Dun & Bradstreet Software called us on a glaring error in this section last week about the departure of Vice President Dean Redfern. Our comment that Redfern was one of only two out of nine members of the board with roots in the old McCormack & Dodge was way off base. Just prior to Redfern's resignation, M&D-ites made up a five-man majority, which we certainly should have known, because we reported the rehiring of John Landry and the promotion to president of Henry P. Holland Dec. 17.

The beginning of 1991 is certainly primed to earn its place in the history books, with the Middle East crisis reaching a boiling point, the longest U.S. economic expansion all but done and buried, and some staid computer giants trying to turn a new page. But we're interested in good news, too; users who are employing technology to beat back the wolves have an open door here. Just contact News Editor Pete Bartolih, and we'll show others how to use your tricks. Phone (800) 343-6474, send a fax to (508) 875-8931 or message COMPUTERWORLD on MCI Mail, 76537, 2413 on Compuserve or MHTS78A on Prodigy.

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